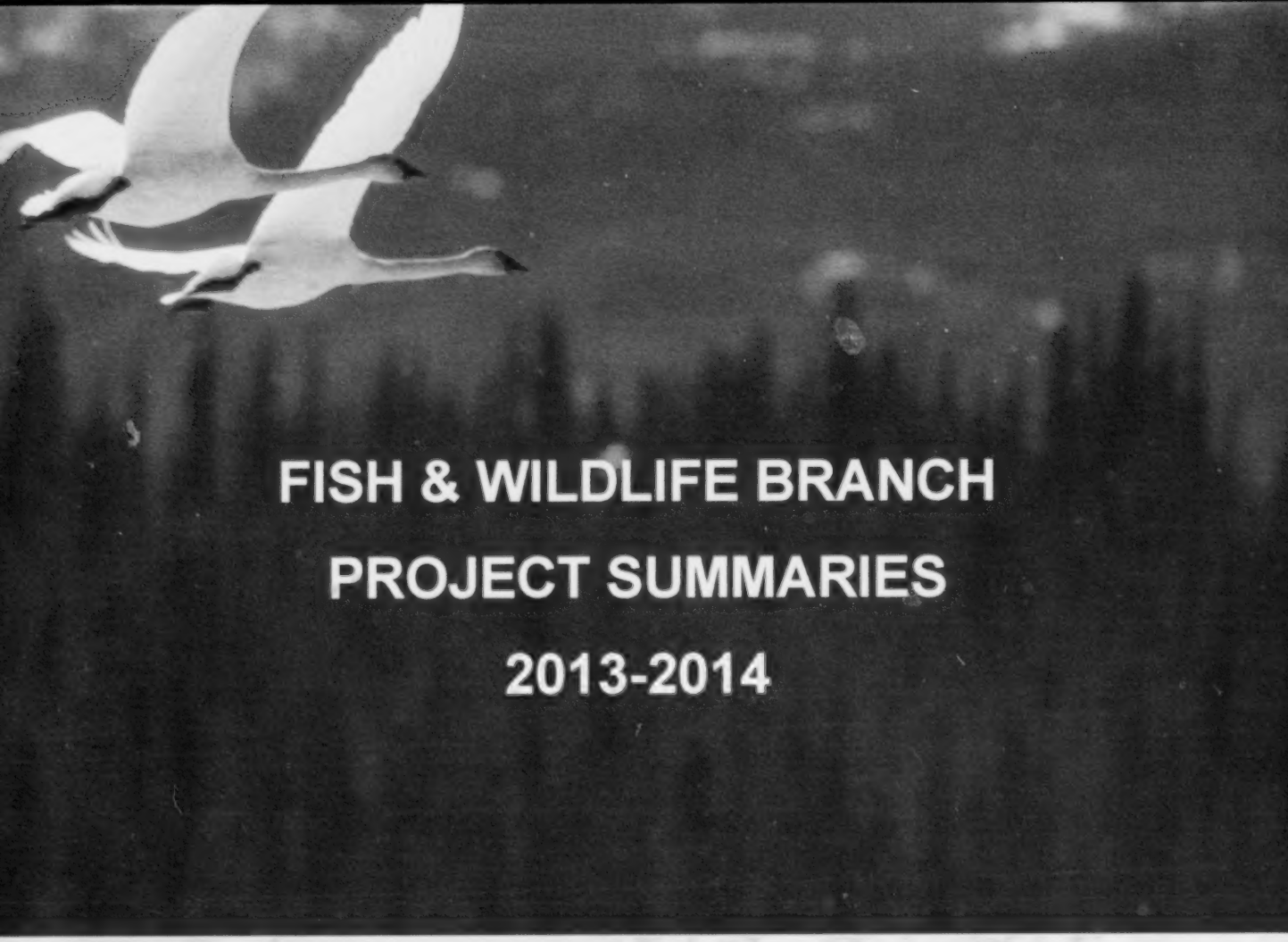

FISH & WILDLIFE BRANCH
PROJECT SUMMARIES
2013-2014

Yukon
Environment

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BIODIVERSITY MONITORING and RESEARCH

Bat Monitoring and Conservation

Little Brown Bats and Northern Long-eared Bats are Yukon's two bat species. They are now deemed *Endangered in Canada* because of the threat posed by an emerging disease: White-Nose Syndrome (WNS). WNS is spreading westward and has already devastated populations in north-eastern North America. This project will help us establish baseline information from which to assess the pending impact of this disease.

Project Description: What we're going to do

This project monitors changes in the diversity and abundance of Yukon bats. We are developing innovative methods for monitoring Little Brown Bats that have the potential to be used for similar bat monitoring programs elsewhere in Canada and Alaska.

By focusing our efforts in YG campgrounds, the project also has the potential to highlight natural pest (mosquito) control in campgrounds, alleviate problems with bats in picnic shelters, and provide wildlife viewing opportunities.

One or more wildlife viewing events will be scheduled in relation to our project activities, and local media will be engaged as opportunities arise.

Management Implications: Why we're doing it

It is predicted that WNS has the potential to cause the virtual extinction of the Little Brown Bat within 10-15 years. This bat was by far the most numerous bat species in Canada, and plays a key role in regulating nocturnal insects, including pests, in the boreal forest.

This project is being conducted to monitor the status of species at risk in Yukon, with a focus on documenting population change and providing that information to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and other assessment bodies (e.g. general status, NatureServe). It has been designed to link to similar projects being conducted elsewhere, making our data comparable on a continental scale. The information will also be useful for developing national (or territorial) recovery strategies for these species, as required under the federal Species at Risk Act.

This project also contributes to our efforts to monitor non-game species and those that may be affected by climate change. By focusing our work in territorial parks, we help Parks Branch with their mandate for ecological monitoring, while building capacity in Parks staff to conduct wildlife monitoring projects that are a priority for our branch.

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Project Activities: How we'll get it done

This is a continuing project.

We will continue to band and monitor bat populations at bat houses erected in southern and central Yukon, primarily in or adjacent to YG campgrounds. Field work will occur on about 15 nights from May to September. We will capture bats as they exit from the bat houses, and then measure, band, assess them for reproductive state before releasing them.

We will use mark-recapture techniques to:

- conduct a population census of the colonies;
- calculate productivity (proportion of pups born); and
- calculate adult survival (number of previously marked bats returning the following spring).

This information will provide a reasonable assessment of change in these populations and establish baseline information from which to assess the pending impact of White-Nose Syndrome.

We will also use bat detectors to monitor for bat activity in a small grid near Whitehorse to look at the relative abundance of bats on the landscape. Then, using new statistical methods, we will estimate occupancy rates, which can be used to describe abundance.

Thomas Jung, Senior Wildlife Biologist

Collared Pika Monitoring

This project monitors Pika populations in Tombstone and Kusawa territorial parks using staff and volunteers. Pika are highly susceptible to changing climatic conditions, and will likely be the first species listed on the federal *Species at Risk Act* due to the threat posed by climate change. They were recently assessed as a species of Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Project Description: What we're going to do

We will use basic and non-invasive survey methods, relying on park rangers, naturalists, and volunteers from the community, to determine the presence or absence of pika in our study areas. We will compare data from year-to-year to assess trends in the occupancy of suitable habitat.

The project is the first in the Yukon to adopt an occupancy modeling approach, giving us the ability to "test drive" how these new, innovative methods work. It has been designed to link to similar projects being conducted elsewhere, making our data comparable on a continental scale.

Management Implications: Why we're doing it

This project monitors the status of species at risk in Yukon, with a focus on documenting population change. The information will also be useful for developing national (or territorial) recovery strategies for this species, as required under the federal Species at Risk Act.

If successful, the occupancy modeling approach may be useful for future monitoring of other species of management interest (e.g. caribou, moose, etc.). The project creates the opportunity to involve Parks Branch and the community (Friends of Dempster Country) in monitoring species at risk.

Project Activities: How we'll get it done

This project will occur in July and August in Tombstone Territorial Park and the proposed Kusawa Territorial Park. We will visit between 60 and 120 previously identified talus patches at least twice during the year to note pika presence or apparent absence. We will use these data to compare with a similar project done in 2009 at 59 talus sites to note if there was a change in occupancy rates (which would signal a change in population status).

Thomas Jung, Senior Wildlife Biologist

Gyrfalcon Inventory and Monitoring

This project tracks the occupancy and productivity of gyrfalcons in the Coast Mountains in order to assess if a harvest should be permitted in the survey year. Gyrfalcons are a highly valued bird for falconers. They are rare in the Coast Mountains of Yukon and British Columbia, and they demonstrate marked annual variation in their reproductive output. It is questionable if this isolated, trans-boundary population can sustain an annual harvest in years with particularly low productivity.

Project Description: What we're going to do

This monitoring project will examine the productivity of selected nest sites in the Southern Lakes region. This is year 12 of a long-term monitoring initiative for this species in the region.

Information on gyrfalcon populations and productivity is shared with British Columbia which contributes to the joint management of this trans-boundary population.

Management Implications: Why we're doing it

The gyrfalcon monitoring program ensures Yukon meets national and international obligations for this *Convention on International Trade in Endangered Species* (CITES) of Wild Fauna and Flora species, and partially fulfills a commitment to the Yukon/BC MOU.

This population has reached a previously unrecorded low, likely due to ptarmigan population cycle failure. As an indicator of broader ptarmigan population change, gyrfalcon monitoring represents a cost efficient method to describe the state of each of these harvested populations in this region.

Project Activities: How we'll get it done

This is a cooperative monitoring project with Yukon Parks Branch and Yukon College. In June 2013 we will conduct a 1-day aerial survey of known gyrfalcon nesting territories in the Coast Mountains, including portions of Kusawa Territorial Park, to monitor for occupancy of territories by nesting pairs, and their reproductive output (the number of chicks in the nests).

Thomas Jung, Senior Wildlife Biologist

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Environment

Impact of Climate Change on Snowshoe Hare Survival

In this cooperative study, we are examining how snowshoe hare adapt to rapid changes in the timing and duration of snow cover. Snowshoe hare are a keystone species in Yukon's boreal forest. Climate changes that impact snowshoe hare may greatly affect how animal communities in the area function, with possible impacts on key furbearers such as lynx and wolverine.

Project Description: What we're going to do

We will monitor a small sample of snowshoe hares to note the variation in changes in coat colour in relation to snow conditions, and their survival. A companion study is being conducted at a more southerly location (Montana).

Management Implications: Why we're doing it

Hares' ability to adapt coat colour changes to changing snow seasons can have population implications if adaptation lags, with possible effects on furbearer populations.

Understanding the ability or limitation in adaptation to climate change by snowshoe hares allows communities and wildlife managers to better understand the potential impact on trapper's livelihood and lifestyle.

Project Activities: How we'll get it done

This is the second of a four-year cooperative study with the University of British Columbia and the University of Montana. Most of the work is being carried out by the University of British Columbia.

Up to 30 snowshoe hare are captured and radio-collared in early spring (April) near Kluane Lake and are then monitored by radio-telemetry several times a week through to early-fall (October) to note their coat colour and survival, in relation to snow conditions.

It is anticipated that another 30 snowshoe hare will be monitored in years three and four. This will allow us to look at within-year and between-year variation in snow conditions, coat colour changes, and hare survival.

Thomas Jung, Senior Wildlife Biologist

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Keystone Boreal Species Trend Monitoring

Tracking population trends in small mammals and snowshoe hares provides an early warning of change to the natural environment and contributes to understanding the resilience and vulnerabilities of Yukon's boreal forest food web. Understanding the natural year-to-year variations is a foundation from which we can discuss and describe trends and monitor any emerging issues in these populations that could in turn possibly affect harvested species.

Project Description: What is this project about?

The project is an annual monitoring program based on the established long term studies in the Kluane region and is anticipated to include Mayo, Watson Lake, Faro, Whitehorse, and Burwash. Monitoring involves the collection of traditional and local ecological knowledge as well as scientific measures.

Standardized methods are used across a network of sites in Yukon. The data we collect is analyzed for trends in annual productivity, keystone species population trends, and changes in furbearer species density. The central database is continually updated and includes local knowledge on environmental conditions.

Management Implications: Why we're doing it

Long-term monitoring of the key components of the boreal forest food web gives us baseline data for understanding the effects of climate change and other, direct land use effects. These effects can have management implications (for example, trapper success, human-bear conflicts). The results of monitoring programs help explain variation in cycles of hare, small mammals, and furbearers. An exploration of the data will take place to assess if it is useful in predicting berry crop variation and that relationship to human-bear conflicts.

Project Activities: How we'll get it done

Collecting information about ecological baselines and variation is most informative if done annually. During the summer, we will use consistent methods on our existing standardized monitoring sites to measure the key boreal food web components— mice, vole, and snowshoe hare populations as well as annual productivity of ground berries, spruce cones and mushrooms.

We will also continue monitoring the abundance of small and medium-sized carnivores using track counts in 5 communities during the following winter (Mayo, Faro, Watson Lake, Kluane, and Whitehorse). Community members, Regional staff, conservation officers, and Biodiversity Section staff conduct these surveys.

We will continue with our annual interviews, started in 2004, of local residents in the Mayo area about conditions on the land and their subsistence activities, to incorporate local knowledge into our database and increase community involvement in the monitoring. Local students conduct these interviews.

Todd Powell, Manager, Biodiversity Section

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Species at Risk Management

This project delivers Species at Risk programs that meet Yukon government objectives and requirements in National/Provincial/Territorial Agreements, such as the National Accord for the Protection of Species at Risk, COSEWIC, RENEW, and CITES. Emphasis is on species of particular importance to Yukoners, such as grizzly bears, polar bears, caribou, and bison.

Project Description: What we're going to do

This program involves the coordination and delivery of species at risk investigations and reporting. It also supports Yukon's representation on national and international forums and committees for species at risk concerns, coordinating management and investigations with regional and species programs staff, and addressing topics of public and political concern as they arise.

Management Implications: Why we're doing it

This program supports Yukon's ability to adaptively manage for harvested species at risk, list and rank species in Yukon, and inform planning activities of the diversity and status of species affected by both human activity and climate change.

Project Activities: How we'll get it done

Activities for this project are:

- Participate in national species at risk forums (COSEWIC, RENEW, General Status, CITES)
- Coordinate management planning for Yukon species by providing technical representation on national species at risk teams for key species (e.g. bison, polar bears).
- Develop territorial general status ranks for vertebrate species (freshwater fish, resident birds, and raptors) in a workshop setting that includes resident Yukon experts for these species groups.
- Provide technical input from Yukon into national species status assessments
- Prepare reports on investigations of species at risk deemed as priority.

Thomas Jung, Senior Wildlife Biologist

Yukon Conservation Data Centre (CDC)

The Yukon Conservation Data Centre (CDC) is part of an international network and is the primary body responsible for supporting status rankings for all species in Yukon. Collected information is critical for land-use planning, environmental assessments, and to meet the obligations of agreements including the *Umbrella Final Agreement*, *Canadian Biodiversity Strategy* and the *National Accord for the Protection of Species at Risk*.

Project Description: What we're going to do

Yukon CDC's role is to gather, maintain, and distribute information on wildlife and ecological communities of conservation concern in the territory, and coordinate assessments to determine conservation status for all Yukon species. The CDC's database currently lists and tracks information on the locations and conditions of 258 species of conservation concern in Yukon. The Yukon CDC also produces materials and hosts workshops designed to help people learn about species of conservation concern.

Management Implications: Why we're doing it

By providing information on rare species and ecosystems the Yukon CDC is able to support agencies involved with land-use planning, species at risk recovery planning and environmental impact assessments.

The Yukon CDC meets government obligations to manage and conserve species at risk under the *National Accord for the Protection of Species at Risk* and the federal *Species at Risk Act*.

Project Activities: How we'll get it done

This on-going project is the central source for Yukon's rare species and ecosystem data. We will continue to collect data from multiple sources and serve as a point of contact for the public and government for all information related to rare or at-risk species in Yukon.

We will continue to assign and update rankings for all Yukon species and play a proactive role in identification of rare elements (plants, animals, and ecosystems) and their conservation. This will feed directly into general status reporting of species of conservation concern.

- Continue to add information about rare species to the YCDC's database;
- Update the ranks of plant and animal species in the database, concentrating on those that are globally and nationally of conservation concern;
- Publish outreach materials (updating Yukon Species at Risk booklet, species information sheets for field identification, and Watch and Track lists) in collaboration with other departments (e.g., vegetation components);

- Identify and describe ecological communities of conservation concern;
- Hold public species at risk information workshops; and
- Provide ongoing support the national General Status ranking process.

Bruce Bennett, Coordinator YCDC

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Environment

CARNIVORES

Grizzly Bear Diet-based Trophic Relationship and Population Study (Southern Lakes)

The population study of grizzly bears in the Southern Lakes region began in 2009, in collaboration with the area's First Nations. The study area covers the important grizzly bear ranges between Tagish Lake and Kusawa Lake, from the Alaska Highway south to the British Columbia border.

This multi-year study will provide a solid estimate of population and genetic make up and information on grizzly bear habitat use (including important den use and foraging areas in the region). Nutritional status, seasonal movement patterns and an index of annual cub production and survival will also be outcomes of this work. As a primary harvest species, and potentially in decline in the Southern Lakes area, it is important to gather information specific to this population and complete an assessment of population abundance and status.

This project is important at an international scale because it helps Yukon meet obligations under CITES (Committee on the Trade of Endangered Species) to manage this species using the best available scientific techniques and information. Yukon's bear management program impacts Canada's "non-detrimental finding" by CITES, which means that export of grizzly bears will not adversely affect the wild population.

Project Description: What we're going to do

This project will provide data to monitor grizzly population trend through habitat use (including dens), movement, survival, reproduction, and body condition metrics. We will also assess grizzly bear diet and habitat use, and how these relate to caribou (information obtained from collared Southern Lakes caribou) and moose (information obtained from current and historical moose survey information) distribution.

To increase the sample of collared bears, we will use the existing sample of radio-collared bears to locate and collar additional female bears and will attempt additional captures at remote ground trap and DNA grid sites.

Radio-collars will provide information on movement/habitat use, survival, and reproduction of bears. Scats will be collected during capture and opportunistically from dens, trails and trap sites to augment tissue sample analyses. Information on bear, caribou and moose distribution will used to assess the degree of seasonal overlap among these key species.

DNA hair-snagging stations will be distributed across the range to gather information on individual bears, develop a preliminary population estimate, establish relatedness among bears, and estimate role of immigration and emigration for this population.

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Management Implications: Why we're doing it

The Southern Lakes grizzly bear population is suspected to be declining due to human-caused mortality. Further, suspected decreases in ungulate densities in the region may have influenced their food availability. While bear predation rates on moose have been examined, the extent to which bears rely on ungulates has never been identified. Regional boards and councils have requested information on the trophic relationship between bears and the ungulate species, specifically focusing on bear diet.

Information will be used to manage bear mortality. This includes calculating quotas, identifying means to reduce management kills (by reducing human-bear conflicts), identifying critical habitat components and other habitat management activities through land-use planning and environmental assessment (so as to reduce human-influences on bear mortality), and consider any management implications associated with ungulate/bear interactions.

Project Activities: How we'll get it done

We plan to re-collar and collar 10 to 15 bears this year. We will focus our efforts on zones in the study area where bears are in high density or where bears have not yet been trapped or captured. Monitoring collared bears is proposed to continue until 2015.

Samples of hair and fat are gathered from captured bears and used in diet analysis and to measure their body condition. Collars are used to monitor movement/habitat use, survival, and reproduction. The DNA grid will be established in June-July to collect hair samples that form the basis for the population estimate. Scats will be collected during capture and opportunistically from dens, trails and trap sites to augment tissue sample analyses. While out on the land, local First Nation staff will also collect grizzly bear scats.

Ramona Maraj, Carnivore Biologist

Wolf: Humane Trapping Extension Project

In promoting and supporting the trapping industry and lifestyle, we have a responsibility to promote humane trapping methods to minimize suffering for trapped animals and to promote stewardship and respect for wildlife in management programs. This project supports Environment Yukon's role in working directly with trappers to provide hands on training and support to trappers, satisfying implementation measures of the Wolf Conservation and Management Plan.

Project Description: What we're going to do

The objective of this project is to provide materials and demonstrate proper setups on the trappers' own trap lines. An assessment of the humane attributes of these snares compared to more commonly used snares may require a large sample of snared wolves and will be a factor in deciding how long this program will run.

Management Implications: Why we're doing it

While there are no specific humane trapping standards for wolves, our long experience in the field of wolf management has helped us to improve capture efficiency and to reduce suffering of wolves caught in snares. Carnivore management programs in particular are subject to national and international scrutiny and as an agency working in this area it is essential that we demonstrate resource stewardship.

This work also provides the trapping community with sufficient skills and training to maintain the sustainability of the activity and their credibility when advocating for improved standards. With the approval of the Wolf Conservation and Management Plan there is an expectation that trappers will be more directly involved in the management of wolves and ungulates near communities and key areas of management concern.

Project Activities: How we'll get it done

We will travel to select active trap lines to provide instruction and technical advice to trappers who are using the newer quick-kill snaring equipment.

Peter Knamiller, Coordinator, Wolf Management Program

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Environment

FISHERIES

Angler Harvest Surveys

Angler harvest surveys are a central data source for fisheries management in Yukon. We relate angler survey data and other sources of harvest, to stock assessment information and estimates of lake productivity to determine an appropriate management strategy for the fishery. Based on this analysis, we will implement corrective measures such as education or regulation changes for overexploited stocks.

Project Description: What we're going to do

Each year, we conduct angler harvest surveys on several high-use recreational fisheries in Yukon. The primary goals of these surveys are to determine angler effort, catch rates, harvest, and to gather biological data from fish harvested by recreational fisheries. Results of these surveys will be compared with past results to determine trends in the fishery and the sustainability of the current level of angler harvest. Priority areas for 2013 are Dezadeash Lake, Twin Lakes, and Fox Lake.

Management Implications: Why we're doing it

Angler harvest surveys, in combination with other fish and fishery-related assessments, are used to determine if the angler effort and harvest are sustainable under the existing regulation regime. Regularly monitoring of key harvested stocks can also avoid costly interventions if harvest is too high. This information will guide allocation and regulation decision making processes.

Dezadeash Lake has been identified by Champagne and Aishihik First Nation and Alsek Renewable Resources Council as a lake where harvest concerns exist. The nature of the fishery in Dezadeash Lake (large concentrations of fish gathered at coldwater inflows through the summer) makes it one particularly vulnerable to excessive harvest. Dezadeash Lake has not been surveyed since 2006. Findings from an angler harvest survey will be analyzed with data from a concurrent lake trout assessment.

Twin Lakes have been identified in the Little Salmon Carmacks Community Based Fish and Wildlife Plan as lakes with fish resource concerns as well as potential harvest concerns. Angler harvest surveys have not previously been conducted on Twin Lakes. Findings from this survey will be analyzed with data from the concurrent lake trout assessment to determine if current harvest is sustainable

Fox Lake has not been surveyed since 2001. Angling pressure is known to be high and approaching sustainable limits, and the general angling regulations currently in place may not be adequate to maintain lake trout stocks. The angler harvest survey results will be analyzed with data from the concurrent lake trout assessment to address this concern.

Project Activities: How we'll get it done

A contracted field worker will conduct face-to-face interviews with anglers on selected sample days throughout the summer. The worker will ask a standard set of questions about the social and biological aspects of the fishery, such as the time spent angling and the species and number of fish caught.

Contractors will carry out surveys on Dezadeash Lake, Twin Lakes, and Fox Lake. Angler harvest survey work will be augmented through collaboration with Champagne and Aishihik First Nations.

Aaron Foos, Fisheries Technician

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Aquatic Health Monitoring for Placer Mining

This project, when combined with Yukon Energy, Mines and Resources' (EMR) Water Quality Objectives monitoring and Economic Health monitoring, informs the Yukon Placer Secretariat's adaptive management process. Through this process, decisions are made to change or modify effluent discharge standards for placer mining to maintain and protect the health of Yukon aquatic environments. The system is of great importance in affording sufficient protection to freshwater fish (and salmon) and their habitats.

Project Description: What we're going to do

This is an ongoing project to monitor how placer mining activities are affecting run-off water and stream organisms to ensure established standards are appropriate. Field work primarily takes place in placer mined watersheds in coordination with the federal Department of Fisheries and Oceans (DFO) and Yukon Energy, Mines and Resources. Forty sites are sampled annually. The final selection of these sites takes place at a coordination meeting each spring. Data gathered is shared to support regulatory decisions made under the Placer Regime.

Management Implications: Why we're doing it

The 2003 Record of Agreement commits the Yukon government, Council of Yukon First Nations and DFO to develop and implement a new regime for placer mining and its impacts on fish habitat. Yukon government and DFO are jointly responsible for carrying out Aquatic Health Monitoring, and Environment Yukon has been requested by EMR – Placer Secretariat to assist with this task.

Project Activities: How we'll get it done

Field work protocol is detailed in the Yukon Placer Secretariat Watershed Health Monitoring Protocol. In a typical year, Environment Yukon will sample 15 sites by helicopter and 5 sites will be sampled by boat / road access.

Field work is done between July 15 and August 7 each year so that sampling of aquatic benthic macroinvertebrates is done consistently.

Results of the monitoring will be communicated through the Yukon Placer Secretariat in the Annual Monitoring Report.

Aaron Foos, Fisheries Technician

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Fish Health Monitoring & Other Laboratory Functions

Monitoring the health of local fish enables Yukoners to have access to a healthy supplement of fish in their diets. Healthy fish also contribute to the health and sustainability of fish populations.

This program supports our ability monitor fish health and to provide quick feedback to the public if concerns about fish disease or parasite issues arise.

Project Description: What we're going to do

This is an ongoing project that includes several activities, including conducting laboratory analyses of fish and other fish-related biological specimens and participating in sampling of fish for contaminant levels. We will also co-ordinate aquatic animal health activities (including disease screening for introduced and transferred fish) and identifying fish diseases and parasites.

Management Implications: Why we're doing it

The Yukon public expects us to maintain a system to monitor fish populations in order to detect any problems as they arise. This project also supports our ability to provide quick feedback to the public if concerns about fish disease or parasite issues arise. Ongoing monitoring contributes to the safety of fish stocks through the maintenance of appropriate screening processes.

Project Activities: How we'll get it done

We will monitor the health of fish populations throughout Yukon by examining diseased fish turned in by the public or caught in netting studies. Some work will focus on areas and stocks that have been identified as having potential or actual disease or parasite problems.

We will continue to collect and examine stomach contents of between 250 and 500 fish annually. Stomach content data will be incorporated into reports on fish populations where appropriate.

We will monitor the health of hatchery-raised fish at the Whitehorse Rapids Fish Hatchery through disease screening to ensure that no diseased fish are released into the wild.

We will co-ordinate the collection of samples and their analysis for contaminants and communicate results to the public (in part through annual updates to the Fisheries Synopsis) and will continue to participate on the Yukon Contaminants Committee.

Disease information will be incorporated, as necessary, into the *Common Parasites of Yukon Fresh Water Fishes* brochure. Information will also be provided directly to the public when concerns are raised or fish with health problems are submitted for inspection.

Oliver Barker, Fisheries Biologist

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Fish Stocking Program

This program creates and maintains fishing opportunities for Yukoners and visitors alike at stocked lakes throughout the territory. This program promotes angling, and provides ideal opportunities for first-time and occasional anglers to begin or return to angling. Anglers appreciate the diversity of fishing opportunities available through the stocked lakes program; rainbow trout and Arctic char (only found in stocked lakes) are among the most preferred species.

Project Description: What we're going to do

Suitable pothole lakes are stocked on a rotating basis, providing easily-accessible fisheries that are particularly attractive to families and first-time anglers. This program also involves an educational component, including interactive programs on lake stocking, angling pressure and responsible angling practices.

Management Implications: Why we're doing it

Wild stocks of fish in Yukon are slow-growing and susceptible to over harvest if subject to un-regulated fishing pressure. Possession and catch limits are more liberal on stocked lakes. Providing alternative angling opportunities close to population centers alleviates some of the fishing pressure from wild stocks, without requiring more restrictive angling regulations.

The maintenance of the stocking program (currently 20 lakes across Yukon) provides a tremendously important set of opportunities for Yukon anglers: over 20% of resident anglers fish the stocked lakes and Yukoners spend over 6700 days angling in stocked lakes each year (Survey of Recreational Fishing in Canada 2005). Over 90% of Yukon anglers surveyed said that the Stocked Lake Program was 'very important' or 'important' to them (Survey of Recreational Fishing in Canada 2005).

Project Activities: How we'll get it done

We will continue to receive fish from a certified disease-free BC hatchery, and fry produced from Whitehorse Rapids Fish Hatchery. Whiskers, Scout, Hidden 1, Long, Chadden, Veronica, Rantin, Hour, and Lucky lakes are due for stocking this year.

This program also delivers an interactive Hidden Lakes Fry Release public event in Whitehorse in late May, which has become a very popular event, particularly among families with young children.

This program has a good deal of community support, and Yukon Fish and Game Association (YFGA) and other volunteers are involved in the stocking program.

Oliver Barker, Fisheries Management Biologist

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Fisheries Stock Assessment and Monitoring

Stock assessments are one of the basic information needs that support fisheries management decision making. They provide the data needed to develop estimates of harvest potential and to support management strategies that are used to avoid or address over-harvest situations. They provide the oversight that ensures that management approaches are properly supported, from education campaigns to regulatory amendments, and to allow the department to evaluate the effectiveness of their fisheries programs. Stock assessments are the major source of long-term fisheries data and are collected in a systematic and consistent fashion year after year.

Project Description: What we're going to do

This is an annual project. Field work begins in May and is completed within the open water season as determined by fish biology, water temperature, and logistical constraints. Where appropriate, data are used in conjunction with other data (e.g., Angler Harvest Surveys) to produce summary reports for waterbodies of interest. We will develop posters and other communication methods for communities as is appropriate or required.

Specific project priorities are identified early in the season and considered in conjunction with the regional programs, First Nations, and Renewable Resource Councils. Community-based work plans identify fisheries stocks of particular concern.

Field activities vary based on the type of monitoring needed. Based on the level of risk (as outlined in the Status of Yukon Fisheries) netting studies, mark-recapture evaluations, or visual assessments are done and focus on indicator species like lake trout and Arctic grayling.

Management Implications: Why we're doing it

These surveys are the base data used in assessing the state of the fisheries resources and are used to make management decisions. Ongoing and regular evaluation of important stocks is necessary to detect and respond to changes in a timely manner. The information collected in this work allows the department to manage fish resources, to maintain healthy fish stocks and sustainable harvest opportunities, to assess the status of fish stocks, and to monitor changes over time that may be occurring due to anthropogenic (e.g., harvest) and environmental factors (e.g., climate change).

Project Activities: How we'll get it done

We use the SPIN (Summer Profundal Index netting) method to assess key populations of lake trout. This method uses stratified random gill nets to capture lake trout and provides estimates of density and abundance. We will carry out SPIN surveys on Dezadeash, Kluane, Mandanna, Twin, and Fox lakes.

We continue to develop our underwater assessment methods for Arctic grayling. Surveyors wearing dry suits and snorkel gear swim streams and count the number of grayling they see. The proportion of the number of known tagged fish seen by snorkellers is measured. Surveys produce estimates of grayling density and provide basic habitat assessments. This year we will assess Lubbock River and Moose Creek.

Building on our successful development of a mark-recapture survey method for burbot (in Little Fox and Pine lakes) we will assess burbot abundance, condition, growth, and health in Squanga Lake, a popular Southern Lakes winter burbot fishery.

Lake trout and burbot studies on Dezadeash and Squanga lakes will also involve some additional sampling to gather weights and measures and genetic data on lake whitefish/Squanga whitefish species pairs within these lakes. The Squanga whitefish is a species listed as Special Concern under SARA.

We also plan to update lake productivity assessments, through two days of lake sampling supported by fixed-wing aircraft.

Nathan Millar, Senior Fisheries Biologist

Yukon
Environment

Southern Lakes – Lake Trout Movement and Population Structure

Bennett, Nares, Windy Arm, Tagish, Marsh and Atlin lakes are all closely connected by large rivers that allow fish to readily migrate between water bodies. We know, through both local and traditional knowledge and past tagging studies that lake trout move among these lakes. This project will give us an understanding of the contribution of each lake to the system-wide lake trout population, as well as multi-annual patterns of fish migration between feeding and spawning areas.

Project Description: What we're going to do

We will implant radio telemetry transmitters in lake trout and track their movements within the interconnected Southern Lakes (Marsh, Tagish, Nares, Bennett, and Atlin). Telemetry receiver stations set up between the lakes will record the signals as fish move between the lakes.

We will collect genetic material from tagged trout and also ask anglers, subsistence harvesters, and the commercial operators on the Southern Lakes to contribute samples. We will then be able to assign multi-annual, inter-lake migration behaviour to specific sub-populations.

Management Implications: Why we're doing it

By determining the origin, destination, and seasonality of lake trout movements within the interconnected Southern Lakes, and linking this to genetic identity, harvest location and pressure, we can understand the effects of harvest on lake trout subpopulations within this system. This understanding will provide a basis for effective management of lake trout harvest within the Southern Lakes.

Project Activities: How we'll get it done

This is the first year of an anticipated 4-year project. This year, we will place telemetry receiver stations in Nares, Six-Mile and Atlin rivers. We will capture lake trout in Nares River in June (when they are migrating), October (spawning), and February (overwintering). Lake trout of a suitable size will be anaesthetized, have a small telemetry transmitter implanted in their body cavity, and be marked with an external tag. The unique transmitter signals will be monitored by the telemetry receiver stations.

Genetic samples will be sent to a laboratory for analysis.

Oliver Barker, Fisheries Biologist

HABITAT

Assessing Habitat Suitability for Caribou and Moose in the Southern Lakes

The management of wildlife and their habitat relies on a good understanding of species-habitat interactions and identifying the abundance, distribution, and availability of important habitats.

The Southern Lakes Wildlife Coordinating Committee (Habitat Working Group) identified the need for spatial habitat analyses to determine habitat suitability and availability for caribou and moose in the region.

Project Description: What we're going to do

This is Year 2 of a 2-year project (2012-13: Southern Lakes Habitat Assessment).

This project involves identifying the important late-winter habitat for Ibex caribou and for moose in a portion of the Southern Lakes region. The results of this work can be used for local area planning, regional land use planning, development of harvest guidelines, management of harvest, and environmental assessment.

Management Implications: Why we're doing it

Cumulatively, this information will be used to assess the overall distribution and availability of late-winter moose and caribou habitat across a large portion of the Southern Lakes region. This information will help prioritize areas of conservation and management concern and will provide input to environmental assessment and habitat, wildlife, and land-use planning in the Southern Lakes region. When developments are proposed in the area, our data on moose and caribou habitat suitability can be used to determine potential habitat loss and fragmentation. Habitat suitability information can also be used to identify key movement corridors (i.e. the areas between habitats of high value) and movement barriers (i.e. areas impeding or preventing movement) to characterize landscape connectivity. This information is valuable for local and regional land use planning, environmental assessment and wildlife habitat management. Data can also be combined with information on other species' habitat use and suitability to assess the combined habitat value for multiple species across the Southern Lakes region.

Project Activities: How we'll get it done

This year we will map lichen abundance and distribution across the Ibex caribou winter range and develop a computer model of late-winter habitat suitability for the Ibex caribou herd.

Lichen mapping will require the collection of ground data collected in 70 sites distributed across the Ibex range, followed by a computer analysis using recent satellite imagery.

Heather Clarke, Habitat Biologist

Fish and Wildlife Projects 2013-2014
April 2013

Yukon
Environment

Dempster Snowmobile Vegetation Damage

In 1999, the Government of Yukon implemented a series of recommendations put forward by the Porcupine Caribou Management Board to address issues around caribou harvest along the Dempster Highway. One of the management actions was to prohibit the use of snowmobiles by all users in the immediate area of the highway until the ground is frozen and there is sufficient snow on the ground to protect vegetation. This project will determine if this regulation is effective at preventing damage to the vegetation and will help inform future management and regulatory decisions.

Project Description: What we're going to do

A controlled snowmobile traffic study to investigate the effect of snowmobiles in three subarctic vegetation communities was done near Chapman Lake in 2005 and 2006. We will revisit the study area established to assess the recovery or changes in vegetation four years after the experimental treatments ceased. Based on the documented recovery, further monitoring may be needed in the future.

Management Implications: Why we're doing it

This project will determine appropriate snow depths for low impact snowmobile use in autumn and should identify impacts that can be anticipated from their use so that informed decisions may be made.

Project Activities: How we'll get it done

At each of the sites during the peak growing season (mid-July) we will measure species composition and occurrence, biomass, compression, damage to shrubs, and soil moisture. We will also assess the depth to permafrost in late August at sites with and without experimental snowmobile traffic to identify changes in the active layer due to the activity. Finally, we will collect repeat photographs of plots and experimental snowmobile traffic lanes for visual assessment and documentation.

Mike Suitor, North Yukon Regional Biologist

Yukon
Environment

Habitat Protection Areas Inventory, Assessment, and Monitoring

This project assesses or monitors the status of values in Habitat Protection Areas (HPAs) across Yukon. HPAs are identified primarily through land claim agreements as areas where disturbance to wildlife, or to the habitat on which it depends, could lead to the decline of a species or population.

Project Description: What we're going to do

Each year, we assess the status, develop inventories for, or monitor significant fish, wildlife, and habitat values in HPAs around Yukon. These values differ amongst HPAs but the work typically involves habitat assessments, surveys of semi-aquatic mammals, inventories of biodiversity, and long-term monitoring to determine ecological change. The information provides baseline data needed for the development of HPA plans or arises from a recommendation in a plan (i.e., plan implementation).

Management Implications: Why we're doing it

HPAs may be areas where a wildlife species is concentrated at certain times of year, where a habitat type is rare, or where a site is particularly fragile or susceptible to disturbance. We conduct inventory, assessment and monitoring of the values of HPAs to ensure that they are being maintained. The information gathered is used to support and inform the implementation or the development of HPA management plans.

Project Activities: How we'll get it done

This is an on-going, multi-year project for assessment, inventory, and monitoring of significant fish, wildlife, and habitat values in HPAs. In the case of HPAs that are not yet developed or are in the process of being developed, projects focus on establishing baseline data or assessing the unique values of the HPA. In the case of HPAs for which management planning has been completed, projects are identified in the management plan, or implementation plan, or through advice from technical staff of the Fish and Wildlife Branch and/or First Nations. The timelines and deliverables for these projects are developed by or in conjunction with the HPA steering committees.

In 2013-14, there are two inventory projects for Whitefish Wetlands HPA focusing on some of the main values of the areas. First, an aerial survey for semi-aquatic furbearers will be done in May to document current status. Second, a fisheries assessment will be conducted to collect information on species presence. The methods will be developed with input from the Whitefish Wetlands Steering Committee and the community.

Bruce McLean, Habitat Protection Biologist

Fish and Wildlife Projects 2013-2014
April 2013

Yukon
Environment

Klaza Caribou Herd Population and Habitat Ecology

Mineral exploration is proceeding at a rapid pace within the Klaza caribou herd's range. One very large-scale project (Casino) is at advanced stages and other proponents (e.g., Northern Freegold) are actively working in the area, in addition to a number of placer mining operations. Additionally, the abandoned mine at Mt. Nansen will soon be experiencing significant activities during the clean-up and remediation activities.

This project will provide necessary information regarding the population and habitat ecology of the herd prior to more advanced development. This information will serve as a baseline and will be support inputs to YESAB review processes.

Project Description: What we're going to do

The project is taking place within the range of the Klaza caribou herd, west of Carmacks. This year a number of population monitoring activities (composition surveys, calf survival monitoring, adult female mortality assessments) will occur during key life cycle stages. Movement and distribution information will be acquired by downloading data from GPS radio-collars placed on female caribou in the herd.

To advance the project and our understanding of the landscape and implications of current and possible future development on caribou habitat, satellite imagery that is currently available will be classified, tested for accuracy and then validated in the field.

Human activities and natural disturbances (e.g. fire) on the land have been shown to influence the distribution of caribou. To support our assessment of range and habitat use, current high resolution satellite imagery will be used to develop a detailed assessment of surface disturbance.

Management Implications: Why we're doing it

Information from this project will inform environmental assessment reviews for industrial activity in the Klaza herd's range.

The results of the population assessment will also inform harvest management decisions, as the Klaza herd is currently under a Permit Hunt Authorization regime.

The presence of GPS radio collars in this herd provides the opportunity to validate our calf: cow recruitment rates for their accuracy, based on a comparison of calf survival monitoring of known animals. This is valuable as calf: cow ratios are one of Environment's key monitoring metrics for northern mountain caribou and we rarely have the opportunity to evaluate them. Having collared caribou also allows us to measure our ability to detect animals on the landscape. This is important information for the development of a long-term

monitoring plan for assessing the herd's abundance once collars are no longer present on the herd.

Project Activities: How we'll get it done

This is year 2 of a 5-year project. Project activities for 2013-14 include:

- Ongoing delivery of GPS radio-collar locations from collared caribou;
- Periodic monitoring of calf survival via aerial monitoring of GPS collared caribou. These monitoring flights will take place in early June, October, and late March;
- Retrieval of GPS radio-collars emitting a "mortality" signal;
- Caribou sightability correction assessment based on fall composition and radio-collar distribution;
- Surface disturbance mapping – assessment of natural and human features through remote sensing and interpretation of aerial imagery; and
- Truthing habitat maps (generated in FY 12/13) through GIS and image analysis and field validation checks using helicopter.

Troy Hegel, Caribou, Sheep and Goat Biologist

Heather Clarke, Habitat Biologist

Local Knowledge Habitat Interviews: Dawson Range

The Dawson Range has been extensively staked for mineral exploration in recent years and there is a proposed all-season road to provide access to these claims. We lack information about important wildlife habitats in this area for assessing potential effects of development. Local knowledge interviews have been conducted in Dawson as a part of the regional land use planning process, but none have been conducted for areas further east in the Dawson Range. This project will address this information need.

Project Description: What we're going to do

We will conduct local knowledge interviews in a workshop format or individually with knowledgeable local residents of the Pelly Crossing area. We will map seasonally important wildlife habitats based on the observations of participants. For those seasonal habitats that meet the criteria as a wildlife key area, the mapped locations will be incorporated into the Wildlife Key Area (WKA) database.

Management Implications: Why we're doing it

Knowledge of key areas and other seasonal habitats used by wildlife in the Dawson Range will provide the basis for recommendations on avoiding impacts or mitigating mining activities in the region.

Key areas are used by wildlife for critical, seasonal life functions and are defined for each species or species group. The WKA Inventory identifies those areas that are most restricted in availability, most valuable, or where wildlife is most vulnerable, so that these areas can receive a higher level of protection.

Project Activities: How we'll get it done

These interviews will be conducted during the year as opportunities arise and when our partners are prepared to organize workshops.

The data will be incorporated into the WKA database when it is next updated.

Mark O'Donoghue, N. Tutchone Regional Biologist

Wildlife Key Area Surveys

Wildlife Key Areas (WKAs) are areas that are most restricted in availability, most valuable, or where wildlife is most vulnerable. It is important to identify WKAs so that they can receive a higher level of consideration or protection in development assessment reviews and land use planning. Wildlife key area surveys are central to ensuring that the information in the Wildlife Key Area Inventory is up-to-date and comprehensive.

Project Description: What we're going to do

Key areas are used by wildlife for critical, seasonal life functions and are defined for each species or species group. Surveys are done at key times of year to document animal locations. These identified key wildlife areas are recorded in an extensive GIS database from which digital maps can be made for viewing or printing.

Yukon has seen unprecedented mineral exploration activity over the past two years. Some of the most intense activity is occurring in the central Yukon. We are intending to do wildlife key area surveys in some of these focal areas.

Management Implications: Why we're doing it

Knowledge of wildlife key areas provides the basis for recommendations on avoiding impacts or mitigating mining and other resource development activities. Data collected during these surveys, in combination with other distribution data, can contribute to habitat suitability modeling and can assist with developing population and habitat goals.

Project Activities: How we'll get it done

This year we will conduct several helicopter-based surveys:

- Klondike Plateau Dawson Range: sheep in the spring (lambing) and fall (rutting) and alpine raptors in the spring (nesting).
- Rackla area: sheep in the fall (rutting) and in the late winter.
- Magundy River area and north of Little Salmon Lake: sheep in the late winter.
- MacMillan Pass area: sheep and moose in the late winter.

These are generally one-year projects that occur over 2 fiscal years. The process involves conducting the survey, data checking and storage, WKA analysis and mapping, and report preparation.

Val Loewen, Habitat Inventory Co-ordinator

Yukon
Environment

Yukon Vegetation Classification

Yukon is one of the few North American jurisdictions that does not have a vegetation classification. This project addresses this gap. The Yukon Vegetation Classification (YVC) is about developing a common framework - a tool - to understand and describe the variation in plant communities across the territory. The YVC can be used in a myriad of applications; it is the basis for sound ecological science and robust assessments of land, and ecologically-based management and planning.

Project Description: What we're going to do

This project provides a comprehensive ecological vegetation classification for Yukon's forests, woodlands, grasslands, wetlands, alpine, and tundra.

A robust vegetation classification is a key component of the Yukon Ecological and Landscape Classification (ELC) – the Yukon government's chosen approach to ecological land cover classification and mapping. This project is one of the ways in which the Fish and Wildlife Branch contributes to developing the ELC program.

Management Implications: Why we're doing it

A Yukon vegetation classification will be used manage wildlife habitat, and inform wildlife management decisions. It can be used as an input to environmental assessment and land use planning and for ecological monitoring (e.g. changes to biodiversity due to climate change). The Yukon Vegetation Classification is one of three essential components comprising the Yukon ELC and the Yukon ELC Five-Year Strategic Plan (2012-2017), jointly signed by the Deputy Ministers of the Departments of Environment and Energy, Mines and Resources.

Project Activities: How we'll get it done

The work is carried out by a team of ecologists and biologists, led by the Vegetation Ecologist. This team includes individuals from government agencies (territorial and national) and the private sector that have expert knowledge of Yukon vegetation, soils and current national standards and methodologies of vegetation classification. This year, the Wetland and Shrubland vegetation associations will be completed, and the previously completed Treed and Arctic vegetation associations will be peer reviewed.

Catherine Kennedy, Vegetation Ecologist

Yukon
Environment

OUTREACH and COMMUNICATION

Aquatic Invasive Species

The introduction and colonization of aquatic invasive species (AIS) pose potentially serious threats to Yukon waterways. This project will help to mitigate the risk by raising awareness and understanding amongst the public whose activities are most likely to result in an accidental introduction of AIS.

Project Description: What we're going to do

This project promotes public awareness and prevention of the unintentional introduction or spread of aquatic invasive species. We will focus on developing and delivering communications material to support greater understanding of the issues of a greater suite of AIS and how to prevent their introduction. We will focus on identified high-risk behaviours surrounding fishing or boating practices and be delivered in locations specific to these activities. These materials will also promote public engagement through reporting of suspected AIS detections.

Management Implications: Why we're doing it

Introduction of AIS could pose a significant risk to Yukon's economy and aquatic environments. This project will help to mitigate the risk by raising awareness and understanding of which activities are most likely to result in an accidental introduction of AIS, and what steps can be taken to avoid AIS introduction and spread.

This project flows from the 2010-2011 Yukon Aquatic Invasive Species Threats Assessment project and will support a future Environment Yukon AIS strategy.

Project Activities: How we'll get it done

We will develop and produce educational materials such as a pamphlet and advertising to increase awareness of AIS amongst the public and inform them as to how to help with prevention.

We will continue planning in support of a departmental strategy for AIS.

Heather Milligan, Project Biologist

Yukon
Environment

Co-ordinated Moose Harvest Strategy Support: Kluane

Kluane First Nation, Dan Keyi Renewable Resource Council, Kluane National Park, and Environment Yukon have all identified the need to collaborate and address harvest management challenges to ensure the sustainability of local moose populations.

Project Description: What we're going to do

A steering committee of the collaborating partners has drafted a moose management strategy for the Kluane/Duke River Moose Management Unit, based on extensive local public engagement over the past year. Support is needed for its finalization in the form of technical expertise, meeting facilitation, communication, and education.

Management Implications: Why we're doing it

Annual surveys conducted by Parks Canada in the Upper Duke River area show strong declines in moose numbers over roughly 30 years. A moose census done by Environment Yukon in the Burwash area in 2011 found low moose density, a low bull: cow ratio and a low calf: cow ratio in the Kluane/Duke River Moose Management Unit.

Recent summaries of total reported harvest (including Kluane First Nation harvest data) show annual harvest rates in the study area greater than 9% over the last 10 years, much higher than recommended in the Yukon Moose Management Guidelines.

The strategy will increase awareness of moose population concerns in the area and focuses efforts to improve the long term sustainability of the population. Given the shared interest in sustainable management and a commitment to sharing total harvest data by the community and Kluane First Nation leadership, this project may serve as an important Yukon model for other traditional territories reviewing sustainability of moose populations.

Project Activities: How we'll get it done

Implementation will begin once the strategy is finalized. Actions this fiscal year will likely include extensive communication activities by all parties to voluntarily reduce overall moose harvest and reduce the number of cows harvested, continued harvest data collection by KFN, and support to local trappers to increase wolf harvest.

Shawn Taylor, Kluane Regional Biologist

Southern Lakes Harvest Management

This project will develop a co-operative harvest management framework that will assist managing the long-term sustainability of moose populations in the Southern Lakes. Current harvest management practices in the Southern Lakes are focused on licensed hunters. Harvest reporting is mandatory for licensed hunters, but not so for subsistence harvesters. A framework will begin to address harvest management by all users.

Project Description: What we're going to do

This project focuses on developing co-operative relationships with interested First Nation governments in the Southern Lakes region in order to define management goals for local moose populations and identify harvest management actions required by all parties in order to achieve those goals.

Management Implications: Why we're doing it

This project will help us support our First Nation partners in collecting rigorous and verifiable harvest data from their members and will lead to shared data from all management partners. With complete harvest data, harvest regulation will be more informed, and the management of wildlife populations will be improved.

Project Activities: How we'll get it done

For this project, there will be two main areas of focus:

- Nisutlin River Valley: Finalize a data sharing agreement and initiate a working group with Teslin Tlingit Council to develop a cooperative harvest management strategy.
- Southern Lakes: Assist Carcross/Tagish First Nation in developing harvest information collection protocols and database. We will also pursue collaborative moose (and caribou) harvest management discussions with Carcross/Tagish First Nation, Ta'an Kwächän First Nation and Kwanlin Dun First Nation.

Matt Clarke, Southern Lakes Regional Biologist

Yukon
Environment

Range Assessment as a Cumulative Effects Management Tool

Yukon is undergoing unprecedented mineral exploration and development. Through the environmental assessment process, effects of industrial activity are considered on a project by project basis. Given the concentration of multiple exploration activities and projects in some regions of Yukon, there is a need for the Fish and Wildlife Branch to find effective approaches to support the assessment and management of cumulative effects on fish and wildlife values.

Project Description: What we're going to do

This project builds on a recent report: *Range Assessment as a Cumulative Effects Management Tool: A Recommended Approach for Yukon Environment.* It is aimed specifically at evaluating the use of range assessments as a tool that the Branch can use to organise its technical input into environmental assessments in a way that explicitly considers landscape-scale cumulative effects of multiple developments on wildlife values. Range assessments summarise known information, evaluate risks, define management objectives, and define mitigations and management actions related to specific wildlife values. Range assessments will contribute directly to the larger Yukon Government corporate framework being developed by the Development Assessment Branch for management of cumulative effects. Initial framework documents recommend that the framework be tested via a pilot project in the Casino area, a region experiencing very high levels of mineral exploration and development. This project focuses on developing range assessments for caribou herds in the Casino and Southern Lakes areas.

Management Implications: Why we're doing it

This program will enable the Fish and Wildlife Branch to develop a coordinated and well planned approach to data gathering and analysis using sound and science-based methods, leading to effective and consistent management recommendations. It will allow the Branch to identify and assess probable responses of wildlife to multiple proposed developments at a regional scale. The information we collect is provided to the Yukon Environmental and Socio-economic Assessment Board (YESAB) to help them in their analysis of project-specific and cumulative effects.

Yukon
Environment

Project Activities: How we'll get it done

This program is structured as two pilot projects.

The principle focus will be to develop a range assessment for the Klaza caribou herd in the Casino area. There is relatively little information about this caribou herd and its range: the project will focus on identifying data and filling data gaps, evaluating risks of present and proposed human developments, and recommending mitigations, monitoring, and adaptive management responses. This assessment will contribute to the Branch's input into testing the proposed corporate cumulate effects management framework.

In contrast, the range assessment for the Southern Lakes caribou herd will take advantage of existing information for a well-studied herd in an area with multiple residential, transportation, and forestry developments.

Jamie McLelland, Manager Regional Programs

Fish and Wildlife Communications

This project co-ordinates and facilitates Fish and Wildlife Branch communication initiatives. It provides editorial support to technical staff to develop and deliver appropriate communication tools to achieve their program's conservation and management objectives.

Project Description: What we're going to do

This is an ongoing project. We will assist in developing and producing technical and plain language reports and other materials as needed for varied audiences (public, legislature, boards, and councils), establish and maintain publication review protocols and authorizations to ensure consistency and effective information transfer to the public.

Management Implications: Why we're doing it

Communication is central to all of the primary responsibilities of the Fish and Wildlife Branch. By producing and providing accessible, trustworthy, and useful information this project supports the meaningful participation of Yukon people in planning and decision-making processes.

This program assists with the numerous requests from the public, land claim Boards/Councils, other interested parties (Yukon Outfitters Association, Yukon Fish and Game Association, Yukon Conservation Society) including national and international organizations, for current, up-to-date information associated with Branch Programs.

Project Activities: How we'll get it done

We will provide editorial services for technical reports directly or through contractors and support the development of non-print (web-based) reporting tools.

We will produce final roll-up of species and habitat management guidelines following collaborative reviews completed by the appropriate sections.

Jean Carey, Co-ordinator Technical Reporting Program

Yukon
Environment

Fish, Wildlife, and Habitat Planning

This project supports the development of fish, wildlife, and habitat management planning across Yukon. This work is undertaken in co-operation with First Nations, Renewable Resources Councils (RRCs), the public, and the Yukon Fish and Wildlife Management Board. Planning initiatives cover a range from species management, and special management areas (like Habitat Protection Areas) to community-based fish and wildlife workplans, and more.

Project Description: What we're going to do

This year planning focuses on the renewal of the community-based fish and wildlife work plan for the Nacho Nyak Dun and Champagne and Aishihik Traditional Territories. These multi-year plans identify and prioritize management issues within the mandate of the Fish and Wildlife Branch, First Nations, and Renewable Resources Councils. We will also focus on Habitat Protection Areas like the Pickhandle Lakes HPA and on work to support developing a Yukon Wetlands Strategy and completing a number of plans that are near conclusion (e.g. Ddhaw Ghro, Mandanna, Tatla Mun)

Management Implications: Why we're doing it

Planning is part of Yukon government's obligations under the Yukon First Nation Final Agreements. Planning helps to identify priorities for departmental budgeting and is a means of participating in federal Species at Risk processes and requirements.

The dialogue and relations that are developed through planning are key components for Yukon government to effectively deliver programs and set priorities in a co-management environment.

Project Activities: How we'll get it done

This year we will engage in the renewal process of the community-based fish and wildlife plans for Nacho-Nyak Dun and Champagne and Aishihik traditional territories. These processes involve Yukon government, First Nation governments and Renewable Resources Councils working together to document local concerns regarding fish and wildlife and potential solutions voiced by community members. Each plan is developed through a series of public outreach events (surveys, newsletters), community meetings, plan development and documentation, review processes by planning participants, and finally, publication. We will also attempt to conclude other plans that are near completion such as those related to Ddhaw Ghro, Mandanna and Tatlmain areas.

Tess McLeod, Fish and Wildlife Planner

Yukon
Environment

Fisheries Education and Communication

This project delivers educational programs and information materials to facilitate public involvement in fisheries management, policies, and initiatives. Education is a core component of fisheries management programs. It promotes participation, stewardship, and compliance with regulations. Education is consistently identified as the first step to addressing management challenges.

Project Description: What we're going to do

We will develop and deliver programs that educate anglers about overharvested and stressed populations as a way to decrease angling pressure without regulatory measures. This will be accomplished with signage at lakes and streams or targeted messaging about fish populations in jeopardy. Education initiatives will also focus on communicating information about regulations to improve the rate of compliance. This will be done along with regular enforcement activities and will focus on topics like the use of barbless hooks, and local size, catch, and possession limits. We will also develop and deliver programs that promote angling, particularly to young people.

Management Implications: Why we're doing it

The Status of Yukon Fisheries identifies the importance of public education. Education and communication are ongoing initiatives critical to effective management. An informed, engaged, and responsible angling public will benefit fisheries resources and anglers alike, and promote sustainable management and compliance with fisheries regulations. Education programs will also help engage young anglers, ensuring that angling remains a relevant activity for Yukoners into the future.

Project Activities: How we'll get it done

Education components include:

- Public activities such as Family Fishing Weekend designed to promote fishing and engage young anglers;
- Signage at lakes and streams informing anglers as to the status of populations; and
- Directed education and communication with anglers to address non-compliance rates.

Oliver Barker, Fisheries Biologist

Hunter Effort Survey

Harvest statistics alone do not provide a full picture of hunting activity. Knowing the hunting efforts and methods of Yukon hunters, including the number of active hunters, where and when they hunt, their success rates, and other characteristics will lead to a better understanding of hunted wildlife populations and allow us to make more informed management and harvest decisions.

Project Description: What is this project about?

We will work with the Yukon Bureau of Statistics to deliver a survey that is statistically rigorous and will provide sound and useful information. To simplify the questionnaire and analyses, we focus on hunters of different species on a rotational basis. This year, our efforts are focused on grizzly bear and black bear hunters. This survey will also include hunter satisfaction questions that will become part of ongoing monitoring.

Management Implications: Why we're doing it

Survey information will be used to inform future management and harvest discussions and decisions. We can respond more quickly and effectively to management issues, either through regulation, education, or information if we have current information about hunting practices.

Project Activities: How we'll get it done

Surveys will be mailed out in early December (after hunting season closes) to all licensed Yukon resident hunters who acquired either a black and/or grizzly bear seal in 2013. Hunters who have not returned a survey by mid January will be called and invited to complete the survey over the telephone.

A roll-up of all three years of surveys (including moose/caribou, sheep/goat) will be done after this survey is complete.

Carol Foster, Wildlife Harvest Specialist

Yukon
Environment

North American Caribou Workshop 2014

The North American Caribou Workshop is the pre-eminent gathering of biologists, managers, resource users, and other stakeholders interested in caribou research, management, and conservation. The last time Yukon held the Workshop was 1998.

Project Description: What we're going to do

Yukon will host the 15th North American Caribou Workshop in Whitehorse May 12-16, 2014. We anticipate about 300 biologists, managers, resource users, and other stakeholders interested in caribou research, management and conservation to attend.

Management Implications: Why we're doing it

Hosting the workshop allows Yukon to not only learn and exchange information, but also presents an important opportunity to highlight Yukon's expertise and experience in the area of caribou management and conservation.

Project Activities: How we'll get it done

This is the first year of a 3-year project. During the two years leading up to the Workshop, an event planner will be contracted to develop a web page, arrange on-line registrations and abstract submissions, and arrange or assist the organizing committee with general conference requirements such as catering, facilities booking, advertising, and sponsorship. Publication of the Workshop Proceedings will take place in the following year.

Troy Hegel, Caribou, Sheep and Goat Biologist

Yukon
Environment

Porcupine Caribou Herd: Harvest Monitoring and Hunter Education

This project supports the operation of a Dempster Highway hunter check station and the delivery of Porcupine caribou herd hunter education programs.

Monitoring of the Porcupine Caribou hunt in Yukon is critical to assessing the status and effectiveness of harvest management actions implemented under the Porcupine Caribou Harvest Management Plan.

Project Description: What we're going to do

In the *Harvest Management Plan for the Porcupine Caribou Herd in Canada* (HMP), all parties committed to collecting rigorous and verifiable harvest data from their respective hunters on an annual basis. This project uses a check station on the southern portion of the Dempster Highway to document harvest and as a means to provide educational materials to hunters. In addition, the HMP identify commitments to develop hunter education packages and to deliver education programs and communication on best harvest practices. This project seeks to meet these criteria by participating with other parties to do both.

Management Implications: Why we're doing it

Data collected by this program, when combined with knowledge of caribou abundance and age/sex ratio data collected by the PCH Monitoring Project, will be evaluated at the Annual Harvest Meeting to determine if harvest is negatively affecting the herd. Pending results, specific actions may be taken as outlined in the Harvest Management Plan and the associated Implementation Plan.

Project Activities: How we'll get it done

If the herd's migration enables harvesters to access it from the Dempster Highway, a check station at the Dempster/Klondike Highway junction will operate for 2.5 months to record harvest and provide a contact point between Environment Yukon and active hunters. The number of caribou harvested, along with harvest data from co-management partners will be collected and summarized. The project will also support the completion of the hunter education package.

Mike Suitor, North Yukon Regional Biologist

Yukon
Environment

Technical Reporting Program

This program works to provide Yukon people with accessible, trustworthy, and useful technical information to support their meaningful participation in planning and decision-making. To achieve this, this program coordinates and facilitates Fish and Wildlife Branch communication initiatives. It provides editorial support to technical staff to develop and deliver appropriate communication tools to achieve their program's conservation and management objectives.

Project Description: What we're going to do

This is an ongoing project. We will assist in developing and producing technical and plain language reports and other materials as needed for varied audiences (public, legislature, boards, and councils) and establish and maintain publication review protocols and authorizations to ensure consistency and effective information transfer to the public.

We will produce, as needed, foundational reference materials that can be categorized as "Wildlife Management 101" for use by Boards, Councils, and interested members of the public. This will create an enhanced presence on the Internet and establish non-traditional avenues of information distribution, including interactive presentations and narrated slideshows, with a strong visual focus for a wide audience.

Management Implications: Why we're doing it

This program supports the departmental objective to improve the sharing and communication of data and information. Communication is central to all of the primary responsibilities of the Fish and Wildlife Branch. By producing and providing accessible, trustworthy, and useful information this project supports the meaningful participation of Yukon people in planning and decision-making processes.

This program also assists with the numerous requests from the public, land claim Boards/Councils, other interested parties (Yukon Outfitters Association, Yukon Fish and Game Association, Yukon Conservation Society) including national and international organizations, for current, up-to-date information associated with Branch Programs.

Project Activities: How we'll get it done

We will provide editorial services for technical reports directly or through contractors and support the development of non-print (web-based) reporting tools. The aim is to build on products previously developed in a way that is responsive to emerging issues and needs. Products produced through this program are hosted on the department Internet site. A focus this year will be providing information in support of harvest decisions.

Jean Carey, Coordinator Technical Reporting Program

Yukon
Environment

Wildlife Collision Reduction Strategy

Vehicle collisions with wildlife on Yukon highways are a serious public safety, property damage, and wildlife conservation concern. Highway mortality of mountain caribou is a conservation concern for local communities and First Nations as many of these herds are small and thought to be declining. Collisions with moose are also of considerable importance as they often result in serious human injuries or death.

Project Description: What we're going to do

The *Preventing Yukon Wildlife Collisions Interdepartmental Working Group* has developed a collaborative workplan which outlines priority activities to help reduce wildlife collisions. The Working Group includes staff from the Fish and Wildlife Branch, Conservation Officer Services Branch, as well as the Transportation Engineering Branch of the Department of Highways and Public Works. Activities identified for 2013-14 will focus on the Alaska Highway from the B.C/Yukon border to Whitehorse, and the South Klondike Highway.

Management Implications: Why we're doing it

Given that changing driver behaviour is easier than changing animal behaviour, we predict that targeting drivers has the highest chance of decreasing highway collisions and making roads safer for winter travellers. Reduced highway mortality will support departmental efforts to maintain healthy mountain caribou and other wildlife populations in the territory. When completed, the results of this project will provide wildlife and highway managers with effective mitigation tools to reduce environmental impacts associated with roadway traffic. Unmanaged, these impacts will likely increase due to our growing population and increasing development.

Project Activities: How we'll get it done

Project activities include the identification and monitoring of areas of high collision, acquiring and locating alternative signage in areas of high wildlife activity throughout the winter months, developing a public messaging campaign to increase driver awareness to the presence of caribou on selected highways.

The effectiveness of this integrated strategy will be monitored over the winters of 2013-14 and 2014-15 to assess whether a change in highways collisions can be detected.

Alain Fontaine, Liard Regional Biologist

Matt Clarke, Southern Lakes Regional Biologist

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Yukon
Environment

Wildlife Harvest Management Administration

The Wildlife Harvest Management Program plays a pivotal role in the development and administration of wildlife harvest policies, guidelines, and programs that respect land claims and wildlife management agreements. The orderly and fair allocations of wildlife to Yukon residents and resource-based industries requires close co-operation between the Fish and Wildlife Branch and other branches of Environment Yukon, boards, councils, First Nations, wildlife users, interest groups, and the public.

Project Description: What we're going to do

The Harvest Management program delivers quota administration, reviews harvest regulations, conducts harvester surveys, and shares information with First Nations, boards and councils, the public and stakeholders on harvest practices and regulations.

This programs funds the non-salary operational needs of the Wildlife Harvest Management Section, including travel, advertising, participation on the Quota Appeal Committee, and ongoing administrative expenses (i.e. postage, supplies, printing). This program also leads the Fish and Wildlife Branch implementation of the Wildlife Act regulation change process developed with the Yukon Fish and Wildlife Management Board.

Management Implications: Why we're doing it

This program enhances effective working relationships with Renewable Resources Councils, First Nations, outfitters, and the public, relating to harvest management.

Ongoing advertising is necessary to promote and communicate new harvest management rules and to provide reminders about regulations and harvest reporting requirements.

We need to supply ongoing support for outfitter quota negotiations, including community meetings and Outfitter Quota Appeal Committee expenses.

Project Activities: How we'll get it done

We will update quotas for outfitters and, if necessary, provide support for any appeal processes brought forward by outfitters or trappers. We will continue to inform the public about harvest-related issues through advertising and other effective means.

In conjunction with the Yukon Fish and Wildlife Management Board we will facilitate the regulation review process.

Carol Foster, Wildlife Harvest Specialist

Yukon
Environment

Wildlife Harvest Planning Coordination

This program supports the development, implementation and administration of collaborative strategies with First Nations to coordinate and harmonize harvest management priorities and actions of First Nations, Government of Yukon, and adjacent jurisdictions. This collaborative approach will help to address current conservation issues in specific areas and help ensure the long-term sustainability of wildlife populations.

Project Description: What we're going to do

This program administers the continued implementation of the Porcupine Caribou harvest management plan, and will assist with three new projects for moose including: Southern Lakes, Nisutlin River valley and Duke River / Kluane region.

Management Implications: Why we're doing it

Technical support and statistical advice to First Nations on their harvest data collection programs should result in reliable and accurate information about First Nation harvest levels.

Project Activities: How we'll get it done

In collaborative processes led by regional biologists, we will

- provide available harvest data;
- assist First Nations with the development of harvest reporting systems that will provide data with sufficient rigour to make management decisions; and
- develop and provide communication products that outline biologically-based rationale for harvest management decisions and actions for use by all cooperating parties.

We will continue to provide technical support for harvest data collection to First Nation parties to the Porcupine Caribou Harvest Management Plan. Contract work to fine tune and custom install the harvest database will continue. Many communication products for this plan have already been developed, however, additional pieces are planned to clarify "Green Zone" activities.

We will produce broadly-based communications materials including a "branding" strategy, printed materials, posters, podcasts, radio ads and other relevant pieces. These materials will be adaptable to specific situations, and will help support the cooperative harvest management strategies underway in Southern Lakes and Kluane regions.

Dorothy Cooley, Harvest Coordinator

Yukon
Environment

Wildlife Viewing: Celebration of Swans & Swan Haven

The Wildlife Viewing Program (WVP) organizes and delivers the annual *Celebration of Swans*, and operates the Swan Haven Interpretation Centre. This premier birding festival is entering its 20th year and continues to work to raise awareness about the importance of key wildlife habitats, and provides an opportunity for alternative wildlife management practices through education and appreciation.

Project Description: What we're going to do

A Celebration of Swans takes place annually during the 3rd week of April when swan migrations peaks at Marsh Lake and other open water areas. The festival reaches more than 2,000 Yukoners annually and provides curriculum-specific programming to more than 600 students. Activities are designed to reach a diverse audience of Yukoners and educate about the importance providing a safe place for swans to rest and feed on their migration.

Management Implications: Why we're doing it

This project enhances the visitor experience in Yukon, fosters greater understanding and appreciation in residents and visitors for the natural attributes of Yukon, and increases opportunities for residents and visitors to engage in conservation and stewardship. The WVP directly supports the goals of the Environment Yukon Strategic Plan to promote environmental stewardship and share environmental information with citizens. Environment Yukon receives year-round requests for information on Yukon's wildlife and wildlife viewing opportunities.

Project Activities: How we'll get it done

A *Celebration of Swans* is focused at Swan Haven Interpretation Centre at Marsh Lake, but also provides interpretive activities at Tagish, Teslin, Johnson's Crossing, and Burwash Landing. Events include birding tours, a family activity weekend, bird identification and photography workshops, art exhibits, storytelling, guest speakers, contests, and peaceful swan watching opportunities around southern Yukon.

Work will continue into 2013-14 to vegetate the newly reinforced bank and gabion baskets, and fence off the bank to prevent further erosion.

Plans to revitalise Swan Haven Interpretation Centre include adjusting the building's indoor displays and spaces to better accommodate large groups and the associated activities, update and improve the information and displays, refinish the outdoor viewing deck, and update the outdoor panels. These panels are open to the public outside of Swan Haven operating season and are regularly visited by tourists throughout the summer season.

Carrie McClelland, Wildlife Viewing Biologist

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Environment

Wildlife Viewing: Community Projects and Products

Opportunities to view and appreciate wildlife are an important component in fostering stewardship and respect for the natural world. Each year the Wildlife Viewing Program (WVP) reaches directly an average of 4,000 Yukoners through interpretive walks and talks in Yukon communities. Many more Yukoners and visitors gain information about wildlife viewing and natural history through the suite of products available in print and electronically. The WVP focuses on working with community organisations to develop products and projects that highlight local assets and expand wildlife viewing opportunities. Working cooperatively with communities promotes local knowledge sharing and provides communities with the tools to enable environmental stewardship.

Project Description: What we're going to do

The WVP works with community groups across the territory in order to highlight a variety of ecosystems and wildlife viewing opportunities while utilising local knowledge and experiences. Community-directed projects allow communities to share their knowledge of local wildlife and wildlife issues with visitors and other Yukoners. Projects include trail development and maintenance, interpretive panel or brochure development, viewing platforms, information kiosks, and support for locally provided walks and talks. This year, WVP will provide assistance and guidance to the communities of Whitehorse, Dawson, Mayo, Faro, and Destruction Bay.

Management Implications: Why we're doing it

This project enhances the visitor experience in Yukon, fosters greater understanding and appreciation in residents and visitors for the natural attributes of Yukon, and increases opportunities for residents and visitors to engage in conservation and stewardship. The WVP directly supports the goals of the Environment Yukon Strategic Plan to promote environmental stewardship and share environmental information with citizens.

Project Activities: How we'll get it done

To encourage stewardship, raise awareness of biodiversity issues, and develop local viewing opportunities, publications and sites are developed with partners. In 2013-14 the following products are anticipated to be developed:

- Whitehorse – Maintain existing signage in the city's Significant Wildlife Areas as well as:
    - Install and promote interpretation surrounding the YECL Eagle camera at the Robert Service Eagle's nest.
    - Install and promote the newly refurbished and interpreted Boreal World's trail.
- Dawson City – natural history interpretation will continue to be the focus of new interpretive developments. WV will

continue to work with the city and Tourism & Culture and Yukon Parks on additional sites such as trail development to overlook Steamboat Slough in West Dawson.

- Mayo – Tourism plans to remove redundant signage from the main dike downtown. Wildlife Viewing will use existing infrastructure and stands for wildlife related interpretive panels. As Mayo is a hub for fly-in backcountry wilderness trips, there is an opportunity to provide information regarding wildlife in these remote locations.
    - Initial site work and preparation has been done at Minto Bridge between Mayo and Keno. Additional work for trail development and installing of interpretive signage planned for 2013, in partnership with Tourism & Culture.
    - Mt. Haldane has become a focus for tourists in Mayo wishing to explore the region. Directional signage and trail/alpine information will be developed to promote respectful use of this area in partnership with the Heritage Branch, Highways and Public Works, and Mayo community members.
- Faro/Ross River – Continue to work with the community to improve viewing opportunities and support the Crane and Sheep Festival, now entering its 10th year.
- Destruction Bay – Community members have expressed an interest in updating their wildlife information kiosk and providing opportunities for travellers passing through to learn about the area. Work would consist of partnering with the RRC and community members to update materials and highlight local assets.
- Travel to RRCs to present on non-consumptive approaches to wildlife management; providing resources and support to RRCs to address non-consumptive wildlife management solutions.

Carrie McClelland, Wildlife Viewing Biologist

Wildlife Viewing: Events and Information

The Wildlife Viewing Program (WVP) provides opportunities for the public to learn about Yukon's environment and foster a better understanding of the natural world. Through public engagement, WVP projects directly support Environment Yukon's strategic goals of promoting environmental stewardship and sharing information with Yukoners to inspire appreciation of Yukon's environment. The WVP hosts wildlife viewing events and provides Yukoners with access to wildlife information. Brochures, webpages, and presentations are effective methods of communication to reach a diverse Yukon population. The non-consumptive use of wildlife engages and inspires Yukoners to appreciate wildlife.

Project Description: What we're going to do

Wildlife Viewing events are delivered through interpretive walks and talks and public presentations that focus on a specific wildlife topic. Events are organised within the annual *Wild Discoveries* series, and focus on a variety of issues related to wildlife management and appreciation. The *Wild Discoveries* series is an ideal venue in which Environment Yukon biologists and other researchers can communicate their findings and knowledge of Yukon's wildlife to the public. The public is directly engaged with experts in the field who are able to answer questions and better inform Yukoners. The WVP also develops wildlife interpretive products such as brochures, booklets, webpages, and posters. WVP currently maintains and regularly updates more than 40 different publications on Yukon wildlife and viewing opportunities.

Management Implications: Why we're doing it

Creating awareness in the public and land claim public structures about wildlife, viewing opportunities, and biodiversity supports conservation and management programs. This project enhances the visitor experience in Yukon, fosters greater understanding and appreciation in residents and visitors for the natural attributes of Yukon, and increases opportunities for residents and visitors to engage in conservation and stewardship. Environment Yukon receives year-round requests for information on Yukon's wildlife and wildlife viewing opportunities.

Project Activities: How we'll get it done

Throughout the territory, throughout the year, special events and programs, such as the *Wild Discoveries* series (since 1998), create opportunities for residents and visitors of all ages and interests to engage in watching and learning about wildlife. The major projects regarding events and information communication are:

- *Wild Discoveries* – this series of interpretive events continues to engage Yukoners in wildlife management issues and educate them about our natural world. Programs are delivered by WVP, with assistance from other Environment Yukon biologists and staff, from June to September, in the evening or weekends.
- Fox Lake Fire – panels have worn out due to exposure and need to be updated and replaced by summer 2013.
- Top of the World Highway – 40 Mile Caribou rest stop viewing platform and panel are damaged and need repair. Panel will be updated with current information and replaced.
- Finlayson Caribou – update the existing panels with current information regarding the status of that herd. Scrape and stain the viewing deck. Partner with Highways and Public Works to replace outhouses that have been chewed by porcupines.
- Publications and print – information regarding Yukon wildlife and habitat will all be reviewed and updated as needed. Interpretation development may include a combination of website information, panel development, and possibly printed matter as required.

Carrie McClelland, Wildlife Viewing Biologist

Wood Bison Co-operative Management

The Yukon Wood Bison Technical Team (YWBTT) develops recommendations for the management of Yukon wood bison through their meetings and provides those recommendations to the Yukon Wood Bison Management Team. This project supports the activities of the YWBTT in fulfilling their mandate.

Project Description: What we're going to do

The primary responsibility of the YWBTT is to implement the Yukon Bison Management Plan and support Environment Yukon's adaptive management framework for wood bison. Specifically, the team recommends an Annual Allowable Harvest (AAH) of wood bison and strategies for meeting the harvest. The team also develops management plans for all Yukon populations of wood bison. Sharing information and developing communication materials are an important part of the YWBTT activities.

Management Implications: Why we're doing it

This project enables the ongoing work of the YWBTT. The YWBTT facilitates an inclusive process among relevant management agencies and councils to make recommendations toward the adaptive management of wood bison – a species that causes concerns to communities and is the focus of a popular resident hunt.

The team is the primary forum for information exchange on bison matters among effected governments and RRCs, the Board, and relevant organizations.

Project Activities: How we'll get it done

Representatives from the Fish and Wildlife Branch will chair and participate in the 2 annual meetings of the YWBTT.

The team will also be developing information materials such as the Bison Banter newsletter, published in November.

Thomas Jung, Senior Wildlife Biologist

Yukon
Environment

UNGULATES

Aishihik & Kluane Caribou Herd Fall Composition Survey

The Aishihik and Kluane herds are part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a Special Concern designation under national Species at Risk legislation. Annual fall composition counts done on select herds throughout Yukon provide an overall assessment of the status of Northern Mountain caribou in the territory and contribute to long term monitoring.

The Aishihik herd is one of two Yukon caribou populations that we have been monitoring long-term and is used as an indicator of productivity in other herds Yukon-wide. This caribou herd is managed as a limited entry hunt (PHA) for residents and a negotiated quota for with a conservative harvest regime. To maintain harvest levels within our caribou management guidelines it is important to have regular monitoring for population trends, composition and recruitment.

The Kluane herd is a very small (less than 200 animals) and has experienced significant declines. The herd is currently closed to licensed harvest. Industrial activity, increasing access, unlicensed hunting, and the Alaska Highway are risk factors that this herd faces. Regular monitoring will help guide conservation efforts for this herd.

Project Description: What we're going to do

We will conduct a composition survey during the fall breeding season (late-September to early-October) when males and females are grouped together and are found on high alpine breeding grounds where they are more visible. All caribou seen will be classified into one of four categories: calves, cows, immature males, or mature males.

Management Implications: Why we're doing it

These caribou herds have undergone intensive recovery efforts to rebuild their populations. Regular monitoring through annual fall composition counts and periodic censuses are required to provide the knowledge that guides conservation and management actions.

Project Activities: How we'll get it done

We will conduct the surveys using helicopters flying along high alpine plateaus where caribou breeding occurs. When groups of animals are encountered they are classified into one of four categories: calves, cows, immature males, or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep, and Goat Biologist

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Chisana Caribou Herd Fall Composition Survey

The Chisana caribou herd was subject to an intensive international recovery effort in the early 2000s. Regular monitoring through annual fall composition counts and periodic censuses is required to provide the knowledge that guides conservation and management actions.

Project Description: What we're going to do

Annual fall composition counts of select caribou herds throughout Yukon provide an overall assessment of the status of Northern Mountain caribou in the territory and contribute to long term monitoring.

This year, Alaska Department of Fish and Game (ADF&G) and Wrangell St. Elias National Park will do a census of the Chisana herd in conjunction with our fall composition survey.

A census and regular rut counts have been identified in the management plan to monitor this herd.

Management Implications: Why we're doing it

Successive years of poor productivity in a caribou herd may indicate a decline, requiring careful harvest management and further population investigation. The annual herd composition indicates likely population trends. For hunting of this herd to be reinstated and maintained, identified thresholds of population trend, bull: cow ratios and recruitment of young into the population must be met.

Annual caribou rut counts done on select herds throughout Yukon provide an assessment or baseline condition for the status of Northern Mountain caribou in the territory. This information also contributes to long term ecological monitoring which helps identify changes mediated by annual weather patterns or longer term climate shift.

Project Activities: How we'll get it done

Surveys are conducted using helicopters flying along high alpine plateaus where caribou breeding occurs. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males, or mature males.

ADF&G will count the Alaskan part of the herds rutting range and we will count the Yukon side. Radio telemetry to support this entire census will be contracted by Wrangell St. Elias National Park. The census will be a "mark resight" survey using radio collared animals as "marked".

Troy Hegel, Caribou, Sheep and Goat Biologist

Yukon
Environment

Dall's Sheep Landscape Genetics

This project aims to incorporate genetic information, demographic information, and landscape features to identify biologically meaningful units (i.e., populations) for Dall's sheep, which can then be used to support management decisions.

Project Description: What we're going to do

This project is a collaboration with biologists from the BC Ministry of Forests, Lands and Natural Resources Operations and the University of Alberta.

We will contribute horn core shavings (700+ samples) collected as part of the compulsory submission of all hunter-killed sheep in Yukon from which DNA can be extracted and collaborate with the geneticists on the data analysis. We will first focus on sheep in the Southern Lakes region (roughly delineated as south of the Alaska Highway to the BC border, and between Kusawa Lake and the South Klondike Highway) and, if deemed successful, the analysis may be applied across Yukon to delineate sheep management units.

Management Implications: Why we're doing it

Game management subzones are the basic unit for Yukon sheep management but there is an outstanding question of whether subzones or groups of subzones represent biologically meaningful sheep management units. The DNA analysis methods in conjunction with landscape feature assessments and existing survey information can be combined to evaluate biological sheep populations. These will provide a more meaningful basic unit by which management (e.g., harvest) and environmental assessment decisions can be made. This work will likely influence many aspects of thinhorn sheep management in Yukon.

Project Activities: How we'll get it done

Three components will be used to identify the management units. Genetic analyses will be carried out to group game management subzones that are genetically similar. Second, landscape features will be assessed in conjunction with the genetic groupings, looking for large valleys or other major movement barriers that could be used to delineate population boundaries. Finally, using the demographic data from the 2009 Southern Lakes sheep survey, these groupings will be assessed to determine if they match accordingly with the demographic data. That is, do the demographic data, reanalyzed based on these groupings, appear biologically realistic?

This is year 1 of a 2-year project. The primary work this year involves Environment staff processing sheep horn samples to be delivered to the U of A. Next year, we will collaborate with University of Alberta for the landscape genetics portion of the project (for Yukon samples).

Troy Hegel, Caribou, Sheep, and Goat Biologist

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Yukon
Environment

Dall's Sheep Survey in the Dawson Range

The Dawson Range has been extensively staked for mineral exploration in recent years and there is a proposed all-season road to provide access to these claims. We lack information about important wildlife habitats in this area for assessing potential effects of development. Sheep are especially sensitive to disturbance from industrial activity.

Project Description: What we're going to do

We will use a helicopter to survey sheep in the Dawson Range, covering all suitable habitat and areas identified from previous surveys and local knowledge.

Management Implications: Why we're doing it

There is a widespread, low-density sheep population through the Dawson Range, but the population information is outdated and we know little about how they use their habitat in the summer, when mineral exploration activity is highest. This survey will address this information need and establish a baseline for subsequent monitoring.

Knowledge of important seasonal habitats used by wildlife in the Dawson Range will provide the basis for recommendations on avoiding impacts or mitigating mining activities in the region.

The results of the survey will be used to identify areas where sheep are potentially vulnerable to disturbance by mining activity and design a monitoring program to examine effects of industrial activity.

Project Activities: How we'll get it done

This survey will take one day and will be completed in July after sheep have had their lambs. When groups of sheep are encountered we will count and classify all animals by age and sex, and record their locations.

Mark O'Donoghue, N. Tutchone Regional Biologist

Ethel Lake Caribou Herd Fall Composition Survey

Recruitment into the Ethel Lake caribou herd has been chronically low since the late 1990s. Concerns about this herd led to a voluntary hunting closure that has been in place since 2002. We have closely monitored this small herd (about 300 animals) with almost yearly rut counts (18 since 1993), giving us long-term trend data. Before harvest of this herd can resume, the communities of Mayo and Pelly Crossing require evidence of several years of good recruitment.

Project Description: What we're going to do

We will conduct a composition survey during the fall breeding season (late-September to early-October) when males and females are grouped together and are found on high alpine breeding grounds where they are more visible.

The data will be added to the database of caribou locations and will be used to map key rutting areas for the Ethel Lake herd.

Management Implications: Why we're doing it

We will use information about recruitment into this herd to guide our decisions about when to end the voluntary hunting closure.

As part of a selected cross-section of herds this survey may contribute to an overall indicator of demographic changes in Northern Mountain caribou across the territory including responses of caribou to phenomena such as a changing climate.

Project Activities: How we'll get it done

This survey will take one day and will be completed in late September or early October. We will use a helicopter to survey the McArthur Range, Kalzas Twins, and ridges in between those mountain blocks, where caribou are known to congregate during rutting season. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep and Goat Biologist

Elk Monitoring and Tick Management

Elk were first introduced to Yukon in the 1950s and occur in two herds: the Braeburn herd and the Takhini Valley herd. After maintaining relatively low and stable populations for many years, elk are now increasing in numbers. The first goal of the Management Plan for Elk in the Yukon (2008) plan is to maintain healthy and viable populations of free-ranging elk in Yukon. Actions under this goal include the ongoing monitoring of elk to determine population size, composition and survival, as well as the occurrence of disease and parasites, such as winter ticks (*Dermacentor albipictus*).

Project Description: What we're going to do

This project has two components. The first is to obtain elk, moose, and deer hides to evaluate the distribution and prevalence of winter ticks within the key elk ranges and elsewhere in Yukon. This evaluation can be used to assess the relative threat to moose and caribou from ticks carried by elk, deer, and other species.

The second project component is to determine their size, location, movement, and distribution of the two elk herds.

Management Implications: Why we're doing it

Implementation of the Yukon Elk Management plan requires the review of action items and implementation of appropriate activities to meet the plan objectives. This project integrates the delivery of this plan with First Nation resource managers, local Renewable Resource Councils and stakeholder groups. The outcome of this work is that the delivery of elk management activities is coordinated, rationales are clear, and the direction for the program is supported.

Because elk ranges are situated on the urban periphery and the Ibex Valley Hamlet objectives have been directed at increased land development, there are continual demands for up-to-date information on the movement, distribution, and relative value of the land to elk. Monitoring movement and habitat use by elk assists and supports our land use reviews for this area.

The composition of the elk herds (male or female, adult, yearling or calf) is a key variable needed to use computer models to estimate their population size and recommend permit allotments. This information is particularly important this year because we are transitioning from a harvest intended to reduce the size of the elk herds to a lower, sustainable harvest.

Project Activities: How we'll get it done

We will be gather hides through the fall and late winter in collaboration with hunters and the Conservation Officer Services Branch. The Animal Health program will process the hides to determine tick numbers.

Composition and recruitment assessments for the Takhini and Braeburn herds during the fall/winter of 2013 will be used to support harvest management recommendations.

To identify annual elk distribution and movement patterns and key elk habitats we will, with support from the Yukon Fish and Game Association, periodically monitor elk on their rutting and winter range. We will also carry out aerial radio-relocation flights to maintain current information about elk distribution.

Sophie Czetwertynski, Moose, Elk, and Deer Biologist

Yukon
Environment

Finlayson Caribou Herd Fall Composition Survey

The Finlayson caribou herd was the focus of an intense recovery program that was implemented in 1983. A late-winter census in 2007 verified what fall composition surveys had indicated – a declining herd. There were an estimated 3,000 animals in the herd; almost half the numbers observed in 1990 at the end of six years of wolf control.

Project Description: What we're going to do

This is an ongoing monitoring project. We will conduct a composition survey of the Finlayson caribou herd during the fall breeding season when males and females are grouped together on high-alpine breeding grounds where they are more visible.

Management Implications: Why we're doing it

A recent increase in applications to develop natural resources within the herd's range has highlighted the need to have current population information to inform management decisions and recommendations to mitigate developmental impacts. Furthermore, conservation and effective management of this herd is a key concern given its value as a subsistence harvest resource for the Ross River Dena Council and Liard First Nation as well as harvest interest from licensed hunters.

Composition surveys of this herd have been conducted annually since 1997. As part of a selected cross section of herds, this survey contributes to an overall indicator of demographic changes in Northern Mountain caribou across the territory.

Project Activities: How we'll get it done

The survey will be carried out over 2 days in late September or early October, 2013. Surveys are conducted using helicopters flying along high alpine plateaus where caribou breeding occurs. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males, or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep and Goat Biologist

Fortymile Caribou Herd Distribution Monitoring

Since the mid-1990s, the Fortymile caribou herd has been the focus of a population recovery program. A number of Alaskan and Yukon agencies have been working together to plan and implement strategies that support the herd's ability to grow and reoccupy ranges they abandoned years ago. This herd is primarily managed by the Alaska Department of Fish and Game (ADF&G) in Tok, Alaska. The 1995 Fortymile Caribou Herd Management Plan identified range expansion as one important indicator of herd recovery.

This project documents the Fortymile caribou herd's current winter range use in Yukon.

Project Description: What we're going to do

This monitoring program annually assesses the winter distribution of the herd within Yukon and will be used in combination with population goals to determine future harvest potential for the herd.

Management Implications: Why we're doing it

Caribou abandoned much of their historical range in Yukon as the herd size shrank in the 1930s. As the herd size slowly increases, and the herd reaches population and range distribution goals, harvest restrictions will be revisited, which may provide for greater harvest opportunities in Yukon.

Project Activities: How we'll get it done

We locate caribou radio collared by Alaskan biologists twice per year using fixed wing aircraft, once in early fall when caribou typically cross the Alaska-Yukon border into Yukon, and once in late winter before the caribou move back into Alaska.

Mike Suitor, North Yukon Regional Biologist

Yukon
Environment

Fuel drum retrieval: Rackla and Lower Stewart River

Winter wildlife surveys in the Rackla watershed and in the Lower Stewart River area in 2012-2013 relied on remote fuel caches placed on airstrips during the previous summer. Fourteen empty or partially filled drums from these surveys remain at the Rau airstrip and six drums are at the Rackla airstrip from the Rackla surveys. Eighteen drums remain at the Thistle Creek airstrip from the Lower Stewart River West-White Gold moose survey. These drums need to be removed before they rust out and spill residual fuel.

Project Description: What we're going to do

We will contract fixed-wing aircraft to remove the empty drums from the Rackla and Rau airstrips and transport them to Mayo, and a barge to retrieve the drums from the Thistle Creek airstrip and take them to Dawson. We will return the drums to fuel distributors in Whitehorse and Dawson.

Management Implications: Why we're doing it

We will continue to demonstrate our commitment to environmental stewardship by removing these empty fuel drums.

Project Activities: How we'll get it done

We will contract aircraft to retrieve the fuel drums on back hauls from other work in the Rackla and Peel areas during the summer of 2013. We will contract a barge to transport the fuel drums from the Thistle Creek airstrip. We will drive the empty drums to Whitehorse and Dawson as our trip schedules allow.

Mark O'Donoghue, Northern Tutchone Regional Biologist

Ground-based moose monitoring

Aerial surveys of moose are costly and can only be conducted about every 5 years in priority areas. In areas with significant harvest, more regular monitoring of moose populations is desirable. Ground-based monitoring is a cost-effective way of monitoring calf survival and it actively involves the local community in keeping track of the health of the local moose population. We have done ground-based monitoring of moose in the Mayo area since 2001, and in Pelly and Carmacks since 2007.

Project Description: What we're going to do

We will distribute booklets with maps to 20 of the most active local hunters in each community and ask them to keep track of all moose they see between August and October.

We will summarise results once the booklets are collected and distribute information summaries to the RRCs, First Nations, and participants.

Management Implications: Why we're doing it

We will use information about moose calf survival as a part of our assessment of moose population health in the moose management units near the three Northern Tutchone communities.

Project Activities: How we'll get it done

This is an ongoing project.

Hunters are provided with booklets and maps in July-August for data collection. Booklets are gathered in November.

We prepare summaries of data in December-January and distribute them before March. We will also present the results verbally at meetings of the Mayo District RRC, Selkirk RRC, Carmacks RRC, and at the Selkirk May Gathering.

Mark O'Donoghue, Northern Tutchone Regional Biologist

Greater Nahanni Caribou Project

This is the final field activity of a multi-year program looking at the seasonal distribution, number, and status of caribou in the Greater Nahanni area. Increasing industrial development, the relative accessibility of these herds, and indications of declining populations were factors in establishing this project. Other managing jurisdictions share these concerns and have provided annual funding contributions to this project.

Project Description: What we're going to do

The objective of the multi-year study is to estimate the size of the herds, their sex and age structure, and to assess herd movements and seasonal distribution. A major component of the project was the deployment of satellite radio-collars on adult females in the herd. Recovering shed collars validate whether collars were dropped or animals died of natural causes.

Management Implications: Why we're doing it

We will use population information to evaluate herd status and support harvest management planning and assessment. Distribution information will be used to evaluate potential effects of development on caribou in the region. Information will also be used to inform industry and regulators about caribou population dynamics and distribution. The Yukon Fish and Wildlife Management Board previously deferred proposed regulation changes for caribou in this area pending the outcome of this status assessment.

Adult female survival is a key information need for this and other caribou assessments. Retrieving these collars will provide an estimate of adult female survival based upon the known fates of radio-collared females. In addition, location information from radio-collared females will be used to refine our understanding of herd distribution in the area. This becomes particularly important as there may be overlap with the Finlayson caribou herd which is currently managed under a Permit Hunt Authorization for licensed hunters. Any information that enhances our understanding of caribou herd distribution and delineation will be valuable for any future regulation changes.

Project Activities: How we'll get it done

We will use a helicopter to access sites where radio-collars have dropped off, retrieve the collars, and assess whether a collar was dropped (i.e., due to a drop-off mechanism being deployed) or was the result of an animal mortality.

The final project report describing all work carried out for the project will be completed this year and results will be communicated to the First Nations, stakeholders and the Yukon Fish and Wildlife Management Board.

Troy Hegel, Caribou, Sheep and Goat Biologist

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Yukon
Environment

Hart River Caribou Location Monitoring

The Fish and Wildlife Branch monitors radio-collared Hart River caribou during the hunting season. Depending on their locations in relation to caribou from the Porcupine herd, we adjust harvest regulations to make sure that Hart River animals are not over-harvested.

The Hart River caribou herd is very accessible to hunting near the Dempster Highway. This accessibility means that high numbers could be harvested, especially in years when the Porcupine caribou do not winter near the Dempster.

Project Description: What we're going to do

We will locate animals in the Hart River herd using radio telemetry and compare these locations with those of Porcupine caribou to determine the most appropriate harvest regulations. We will concentrate our flights in the overlap area with the most access for hunters. Once the locations have been established we will use this information for in-season regulation adjustments such as the emergency closures when necessary.

The data will be added to the database of caribou locations and will be used to map key rutting and wintering areas for the Hart River herd.

Management Implications: Why we're doing it

Effective harvest regulation is critical to ensuring the much smaller Hart River herd is not over-harvested while not impacting the ability of licensed harvesters to hunt when the Porcupine caribou herd is available.

Location information is also used to map key rutting and wintering habitats for Hart River caribou, which is used in environmental assessments and land use planning processes.

Project Activities: How we'll get it done

We will locate radio-collared Hart River and Porcupine caribou from fixed-wing aircraft three times; one survey will identify Hart River Caribou herd distribution in mid-October; a second flight in late October will focus on the overlap area with Porcupine Caribou, and possible third flight in March will again cover the extent of the Hart River herd range. Porcupine Caribou herd movements will be monitored by radio and satellite telemetry collar locations.

Survival of Hart River caribou will be estimated from survival rates of collared animals using standard survival analyses.

Mike Suitor, North Yukon Regional Biologist

Klaza Caribou Herd Population and Habitat Ecology

Mineral exploration is proceeding at a rapid pace within the Klaza caribou herd's range. One very large-scale project (Casino) is at advanced stages and other proponents (e.g., Northern Freegold) are actively working in the area, in addition to a number of placer mining operations. Additionally, the abandoned mine at Mt. Nansen will soon be experiencing significant activities during the clean-up and remediation activities.

This project will provide necessary information regarding the population and advance our understanding of the landscape and implications of current and possible future development on caribou habitat. This information will serve as a baseline and will be support inputs to YESAB review processes.

Project Description: What we're going to do

The project is taking place within the range of the Klaza caribou herd, west of Carmacks. This year a number of population monitoring activities (composition surveys, calf survival monitoring, adult female mortality assessments) will occur during key life cycle stages. Movement and distribution information will be acquired by downloading data from GPS radio-collars placed on female caribou in the herd.

We will assess the accuracy of a land cover classification that was developed for the Dawson regional land use planning process. Data collected during flights over the Klaza area and all available high resolution imagery will be used to formally validate the classification or make any necessary corrections.

Human activities and natural disturbances (e.g. fire) on the land have been shown to influence the distribution of caribou. To support our assessment of range and habitat use, recent high resolution satellite imagery will be used to map linear and planar (non-linear) anthropogenic surface disturbance.

Management Implications: Why we're doing it

Information from this project will inform environmental assessment reviews for industrial activity in the Klaza herd's range.

The results of the population assessment will also inform harvest management decisions, as the Klaza herd is currently under a Permit Hunt Authorization regime.

The presence of GPS radio collars in this herd provides the opportunity to validate our calf: cow recruitment rates for their accuracy, based on a comparison of calf survival monitoring of known animals. This is valuable as calf: cow ratios are one of Environment's key monitoring metrics for northern mountain caribou and we rarely have the opportunity to evaluate them. Having collared caribou also allows us to measure our ability to detect animals on the landscape. This is important information for the development of a long-term monitoring plan for assessing the herd's abundance once collars are no longer present on the herd.

Project Activities: How we'll get it done

This is year 2 of a 5-year project.

Project activities for 2013-14 include:

- Ongoing delivery of GPS radio-collar locations from collared caribou;
- Periodic monitoring of calf survival via aerial monitoring of GPS collared caribou. These monitoring flights will take place in early June, October, and late March;
- Retrieval of GPS radio-collars emitting a "mortality" signal;
- Caribou sightability correction assessment based on fall composition and radio-collar distribution;
- Digital capture of anthropogenic surface disturbance through visual interpretation of high resolution satellite imagery or ortho-photos.
- Assessing the accuracy of the land cover classification (generated in FY 12/13) through field validation using helicopter, and supplemented by high resolution image interpretation.
- Support information gathering for input into a late-winter habitat suitability model slated for development next year, using Resource Selection Function (RSF) or Resource Selection Function Preference (RSFP) analyses.

Troy Hegel, Caribou, Sheep and Goat Biologist

Heather Clarke, Habitat Biologist

Moose Census: Paint Mountain/Jarvis/Cultus Bay areas, Early Winter

Concerns have been raised about high harvest rates, increasing hunter access and the lack of current moose population and trend information for the Paint Mountain/Jarvis/Cultus Bay areas in the Kluane region. This has created uncertainty about the status of the local moose populations. Local observations and information have identified that access has been increasing into post-rut habitats that support large aggregations of moose, which increases the risk that harvest may exceed the ability of the population to support it. These areas were last monitored in 2004.

Project Description: What we're going to do

This project will follow standard early winter moose inventory techniques. The Paint Mountain unit (Game Management Subzone (GMS) 5-41 lies directly north of Haines Junction, between the Alaska Highway and the Aishihik Road; the Jarvis unit (GMS 6-10 and 6-11) is within the Kluane Wildlife Sanctuary south of the Alaska Highway, between the Alsek and Jarvis rivers; and Cultus Bay (5-38) is north of the Alaska Highway between Kluane and Kloo lakes.

Management Implications: Why we're doing it

A current population estimate will allow us to determine if present harvest levels are sustainable. This assessment will inform whether any further management recommendations are needed.

Project Activities: How we'll get it done

This survey will be carried out over 7 days in early winter (November) using both fixed-wing aircraft and helicopters. Moose group locations will be recorded and classified by sex and age. The survey team will record the sex of the adults, the age class (mature, immature, or calves) and locations of all the moose they see.

Sophie Czetwertynski, Moose, Elk, and Deer Biologist

Yukon
Environment

Moose Census: South Canol North, Early Winter

Moose hunting pressure along the South Canol Road is among the highest in Yukon. This will be the first ever moose survey of the South Canol Moose Management Unit (MMU) and is part of our ongoing efforts to monitor and effectively manage priority moose populations throughout Yukon.

Project Description: What we're going to do

This project will follow standard early winter moose inventory techniques. The South Canol Moose Management Unit encompasses the game management subzones adjacent to the South Canol Road between Quiet Lake in the south and the Robert Campbell Highway to the north.

We will evaluate estimated density, population composition and distribution in this area relative to known harvest levels and composition thresholds in the moose management guidelines, and map the early-winter distribution of moose.

Management Implications: Why we're doing it

This survey will provide us with our first baseline information on moose densities, population composition, and distribution in the South Canol Moose Management Unit. Knowledge of heavily hunted and important early winter areas for moose provide the basis for recommendations for harvest management and how to avoid or mitigate the impacts of mining activities in the region.

Project Activities: How we'll get it done

This survey will be carried out over 7 days in early winter (November) using both fixed-wing aircraft and helicopters. Moose group locations will be recorded and classified by sex and age. The survey team will record the sex of the adults, the age class (mature, immature, or calves) and locations of all the moose they see.

Sophie Czetwertynski, Moose, Elk, and Deer Biologist

Moose Census: Teslin Burn, Early Winter

During the 1970s and early 1980s Teslin Burn had the highest moose density and among the highest moose harvest rates in Yukon. Since then, harvest rates have dropped by more than 90% and it is widely believed that moose abundance in the area has declined dramatically. The Teslin Burn has not been censused since 1984. A current and reliable moose population estimate is needed to assess the sustainability of the current harvest rate.

Project Description: What we're going to do

This project will follow standard early winter moose inventory techniques. Teslin Burn Moose Management Unit (Game Management Subzones 9-08 to 9-11) lies between the Alaska Highway and Yukon/BC border, from the Atlin Road in the west to Teslin Lake in the east.

We will evaluate estimated density, population composition and distribution in this area relative to known harvest levels and composition thresholds in the moose management guidelines, and map the early-winter distribution of moose.

Management Implications: Why we're doing it

The results from this census will be analyzed to review sustainability of current moose harvest in this popular and accessible area. Management practices for the area will be reviewed once population information is contrasted with moose harvest activity.

Project Activities: How we'll get it done

This survey will be carried out over 4 days in early winter (November) using both fixed-wing aircraft and helicopters. Moose group locations will be recorded and classified by sex and age. The survey team will record the sex of the adults, the age class (mature, immature, or calves) and locations of all the moose they see.

Sophie Czetwertynski, Moose, Elk, and Deer Biologist

Moose Early-winter Intensive Stratification Survey: Tatchun

Annual harvest of moose in the Tatchun Moose Management Unit northwest of Carmacks is 4-5% of our population estimate, which is above the maximum sustainable harvest level if our population estimate is correct. Our present population estimate is based on a late-winter census conducted in 2011; we conducted the census in late winter because poor weather delayed a planned early-winter count. The low numbers of moose observed in this survey may be because substantial numbers of moose moved out of the survey area, and so our present population estimates may be biased low.

The *Community-based Fish and Wildlife Work Plan for the Little Salmon/ Carmacks First Nation Traditional Territory, 2012-2017* recommends conducting an early-winter intensive stratification survey that will give us data on distribution and habitat use, and also an estimate of abundance that we can use to check our late-winter estimate.

Project Description: What we're going to do

We will use a fixed-wing aircraft to survey the survey area in the Tatchun Moose Management Unit. We will fly transects spaced at about 1-km intervals and record waypoints for all moose and moose tracks observed. We will classify all moose seen by age and sex, where possible.

The data will be used to map important early-winter habitats for moose and calculate a revised population estimate.

Management Implications: Why we're doing it

A population estimate for the Tatchun Moose Management Unit will be used to determine if present harvest levels are sustainable. If necessary, changes in regulations for resident licensed hunters, changes in quotas for outfitters, and working with First Nations to limit First Nation harvest would be implemented to manage harvest.

Data collected during these surveys in combination with other distribution data contribute to habitat suitability modeling.

Knowledge of regional wildlife abundance and the distribution of important and high quality habitats will provide the foundation for developing population and habitat goals.

Project Activities: How we'll get it done

This survey will take 6 days for 2 crews to complete, and will be conducted in late October or November.

The survey team will record the sex of the adults, the age class (mature, immature, or calves) and locations of all the moose they see.

Mark O'Donoghue, N. Tutchone Regional Biologist

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Moose Early-winter Intensive Stratification Survey, Tatchun

The Mayo area and areas to the north and east have been extensively staked for mineral exploration in recent years and there are proposed roads to provide access to these claims. We lack information about important wildlife habitats in this area for assessing potential effects of development.

Project Description: What we're going to do

This is an aerial survey to locate moose in an area near Mayo where there is a high level of mineral staking and exploration and a proposed winter road. The data will be used to map key wintering areas for moose. Knowledge of key areas for moose wintering will provide the basis for recommendations on avoiding impacts or mitigating mining activities in the region.

Management Implications: Why we're doing it

Key areas are used by wildlife for critical, seasonal life functions and are defined for each species or species group. The WKA Inventory identifies those areas that are most restricted in availability, most valuable, or where wildlife is most vulnerable, so that these areas can be maintained with little or no impacts. Data collected during these surveys in combination with other distribution data contribute to habitat suitability modeling. Knowledge of regional wildlife abundance and the distribution of important and high quality habitats will provide the foundation for developing population and habitat goals.

Project Activities: How we'll get it done

We will use fixed-wing aircraft to carry out a 10-day survey in late February or March to locate moose in the Mayo Moose Management Unit where there is a high level of industrial activity.

The data will be incorporated into the WKA database when it is next updated.

Mark O'Donoghue, N. Tutchone Regional Biologist

Applied research into novel methods to assess population estimates for Dall's sheep

This project will investigate a new survey technique that could greatly reduce the cost and lead time needed to obtain abundance estimates for certain populations of sheep, and allow us to contribute more timely, meaningful input into Yukon Environmental and Socio-economic Assessment Act (YESAA) project reviews.

Project Description: What we're going to do

We will conduct trials of a new population estimator recently developed by biostatisticians with the US Geological Survey. This year we will survey the Caribou/Nares Dall's sheep population. Next year, we intend to use this technique to survey the Clear Creek mountain caribou herd. Most significantly, these methods do not require any form of animal marking (e.g., radio-collars) prior to survey work.

Management Implications: Why we're doing it

Where proposed projects occur within their ranges, Dall's sheep and northern mountain caribou are always identified as highly valued ecosystem components during YESAA project reviews. For the majority of project reviews under the YESAA, baseline data on the status (e.g., size, trend) of sheep and caribou populations are often unavailable or out dated. The lack of information can also reduce or completely limit the ability of project reviewers to contribute meaningful comments and mitigation measures through the assessment and licensing process.

If deemed successful, this approach will allow Fish and Wildlife staff, as well as industry contractors, the ability to rapidly estimate the size of both thinhorn sheep and mountain caribou populations without the need for any form of marking.

Project Activities: How we'll get it done

We will conduct an aerial survey of the Caribou/Nares Mt. sheep population using the novel methodology in July.

Troy Hegel, Caribou, Sheep, and Goat Biologist

Yukon
Environment

Porcupine Caribou Herd Monitoring

The Porcupine Caribou herd is the largest caribou herd in Yukon. Threats to the herd have attracted considerable international attention as the herd is highly valued by aboriginal and non-aboriginal peoples from Yukon and elsewhere. To ensure conservation of the herd, multiple partners participate in monitoring aspects of the herd's biology.

Project Description: What we're going to do

This project focuses on understanding herd size, composition, and the health of animals as well as assessing the health of the herd as a country food for residents. We are also examining the interactions between caribou, grizzly bears, and harvesters along the Dempster Highway near the NWT border.

Management Implications: Why we're doing it

Collared caribou increase the rigour of all surveys, including efforts to estimate the size of the population. Collars decrease the cost and reduce bias in surveys, and allow managers to understand where large segments of the population are at any given time. This is important because the herd's seasonal use of its range varies from year to year.

Results from composition surveys feed into population assessments and are needed to fine tune the results of population estimates. Estimates and information derived from composition surveys are used during the Annual Harvest Meeting hosted by the Porcupine Caribou Management Board to determine herd status and therefore harvest allocation.

Monitoring of health indices and metal loads also allows wildlife managers to provide recommendations with regard to human consumption such as the current advisory on consumption of kidneys and livers currently in place. In addition, sampling has the potential to detect global events that may impact country foods, such as the nuclear accident at Fukushima.

Our pilot project to work with Chief Zzeh Gittlitt School in Old Crow will assist in engaging local community members (i.e., students and school helpers) while providing a forum to increase the rigour in sample collection and scientific method in the community. Such interactions can help develop positive long term relationships with the community and provide for opportunity to bridge traditional and scientific approaches to data collection.

Increased interactions between land users and grizzly bears along portions of the Dempster Highway have increased community concerns for people's safety on the land. Through partnership with regional groups we hope to assist user groups increase their knowledge of grizzly bears and bear safety in the region, reducing riskier human activities and behaviours through the development of educational programs and management of attractants.

Project Activities: How we'll get it done

Project activities include composition counts in fall and late winter, annual collaring of caribou, body condition monitoring and disease assessment. Composition counts are aerial surveys to assess and monitor changes in the composition of the herd. Fall composition counts during rut provide the most reliable assessment of sex and age class structure. During late winter, composition counts are used to estimate over-wintering survival and recruitment of young of the previous year.

During the late winter field work, we will capture and deploy approximately 20 satellite and/or VHF collars. Blood samples from captured caribou are tested as part of ongoing monitoring of disease prevalence. Composition data from both surveys will be summarized in short reports immediately following surveys and distributed to all project partners.

Body condition monitoring allows us to monitor caribou condition and the health of country foods. Hunters submit samples from harvested caribou. Regional staff also travel to harvest areas to assist in collection of samples, to promote the sample collection, and to collect additional samples from harvested animals. Sample collection typically occurs in September-early October, and again during late winter. In 2013 we will work with secondary students at Chief Zzeh Gittlitt School in Old Crow to expose students to the integration of community monitoring and scientific method.

We will monitor the distribution of caribou harvesters and grizzly bears adjacent to the Dempster Highway between the Eagle River bridge and NWT boundary to assess conflicts during harvesting activities. This will be done in conjunction with partner programs aimed at reducing attractants created by the harvest of caribou adjacent to the Dempster. We will also work with partners to increase education with regards to harvest and grizzly bears.

Mike Suitor, North Yukon Regional Biologist

Southern Lakes Caribou Herds Composition Surveys

The recovery of the Southern Lakes caribou has been the focus of a long-term program designed to reverse the observed decline in the Carcross, Ibex, and Laberge herds. These herds of caribou are highly valued by consumptive and non-consumptive users alike and are a key species in the co-management of wildlife in this region.

Project Description: What we're going to do

We conduct fall rut composition counts to assess the status of the herds and to measure recruitment, through indicators of population health including bull: cow and cow: calf ratios, to track recovery and measure the effectiveness of management actions.

Management Implications: Why we're doing it

Data collected from these surveys allows us to track and model the recovery of the Southern Lakes caribou herds. Information from this monitoring and modeling will allow us to inform management actions as well as discussions with our First Nation partners and the public concerning potential caribou harvest. As part of a selected cross-section of herds the data may contribute to an overall indicator of demographic changes in Mountain caribou across the territory including responses of caribou to phenomena such as a changing climate.

Project Activities: How we'll get it done

Surveys are conducted in Ibex, Carcross, and Laberge caribou herd ranges using helicopters to determine the composition of caribou groups in breeding areas. When groups of animals are encountered they are classified into one of four categories: calves, cows, immature males or mature males. The tallies in each category are used to calculate the adult sex ratio (bull: cow ratio) and the recruitment rate (calf: cow ratio). These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

The composition surveys will be conducted during the first week of October 2013.

Troy Hegel, Caribou, Sheep and Goat Biologist

Yukon
Environment

Tatchun Caribou Herd Fall Composition Survey

Harvest of caribou in the Tatchun herd is at or above sustainable levels, and the population estimate of this herd is 11 years old. The Fish and Wildlife Branch has closely monitored this fairly small herd (about 600 animals) with almost yearly fall composition surveys (16 since 1993). It is one of several herds in Yukon that gives us long-term trend data.

The Tatchun caribou herd is part of the Northern Mountain population of woodland caribou. The Northern Mountain population has been given a *Special Concern* designation under national Species at Risk legislation.

Project Description: What we're going to do

We will conduct a composition survey during the fall breeding season (late-September to early-October) when males and females are grouped together and are found on high alpine breeding grounds where they are more visible.

Management Implications: Why we're doing it

We use information about recruitment into this herd to guide our decisions about herd health and setting outfitter quotas, in the absence of a recent population estimate.

As part of a selected cross-section of herds this survey may contribute to an overall indicator of demographic changes in Northern Mountain caribou across the territory including responses of caribou to phenomena such as a changing climate.

Project Activities: How we'll get it done

We will use a helicopter to survey the Glenlyon Range, Little Salmon Range, Tummel Hills, and Tatchun Hill where caribou are known to congregate during rutting season. When groups of animals are encountered we will classify the animals into one of four categories: calves, cows, immature males, or mature males.

The tallies in each category are used to calculate the adult sex ratio (i.e., bull: cow ratio), which is the number of adult males relative to the number of adult females. The number of calves relative to the number of adult females (i.e., calf: cow ratio) is the recruitment rate. These ratios are standard indicators of caribou population health, which allow us to highlight potential concerns and make inferences about potential future trends.

Troy Hegel, Caribou, Sheep and Goat Biologist

Wood Bison Inventory and Monitoring

In Yukon, it is a challenge to manage locally abundant wood bison populations in a way that provides for their recovery, as required by the federal *Species at Risk Act*. The 2012 Yukon bison plan tasks bison managers to reduce and stabilize the size of the herd. As a relatively small, isolated population it is important to ensure that herd numbers do not decrease to below our target. Because of the high harvest rate, inherent small population size, and conservation status of the herd, managers need good information about bison to balance recovery, address community concerns and allow local people to benefit from the resource. The opportunity to hunt bison is a valued and beneficial resource, and requires careful management using the best available information on the Aishihik herd population.

Project Description: What we're going to do

Activities planned for this fiscal year come from recommendations in both the management plan for this herd, and the draft national recovery strategy for wood bison in Canada. The bison program will focus on:

- Developing and sharing the successful recovery story of this Threatened species following the relocation through reporting in the form of summary reports, journal articles and other communication pieces;
- Continuing to monitor movements and distribution of bison to provide data to regional planning processes and meet legal requirements for identifying critical habitat under the federal *Species at Risk Act*; and
- Improving the bison health monitoring program to ensure that our populations maintain their current genetically pure and disease free status.

Management Implications: Why we're doing it

This information will be used in the following ways, all of which are contained in the Yukon Wood Bison Management Plan and the DRAFT National Wood Bison Recovery Strategy:

- Provide data to calculate an Annual Allowable Harvest that meets the goals of the territorial and national management plans for wood bison;
- Provide data to better understand the spatial distribution of wood bison and monitor range expansion and shifts in range use;
- Provide data to delineate key habitat of wood bison, as set out under the federal *Species at Risk Act*;
- Describe to various audiences the success and learning outcomes from this complex reintroduction and management of a large, Threatened species in the Yukon; and

- Contribute data to national initiatives to assess the health and genetic status of these small, reintroduced populations that are isolated from other populations.

Project Activities: How we'll get it done

We will conduct an aerial composition count in April 2013. This will provide data on recruitment (calves per 100 cows) and adult sex ratios (large bulls per 100 cows) in the population.

We will replace and replenish a sub-sample of radio-collared bison in the population via radio-collaring operations in July 2013.

We will use the radio-collared animals to monitor survival and to obtain better information on the distribution (including range expansion and shifts in range use) and habitat use of populations. This will require periodically relocating collared bison through four radio-telemetry fixed-wing flights (April, July, November, and February).

We will monitor the health and genetic status of wood bison and contribute data (or samples) to national initiatives to assess the health and genetic status of these small, reintroduced populations that are isolated from other populations. We will do this by collecting samples from hunters and during our capture operations. We will explore approaches to garner reliable and complete samples from hunters in this pilot project.

Tom Jung, Senior Wildlife Biologist (Biodiversity)